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AUTHOR Gilpin, John B.
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ABSTRACT

The PLATO and NovaNET computer-based instructional systems use a fixed system character set ("normal font") and an author-definable character set ("alternate font"). The alternate font lets the author construct his own symbols and bitmapped pictures. This expository catalog allows users to determine quickly (1) whether there is a character set already available that is suitable for a given use; (2) whether there is one available that might be copied and modified to make it suitable; or (3) whether concepts from more than one character set might be combined. It can assist new creation by allowing a designer to quickly scan the different approaches that other designers have taken to a given character or set of characters. The catalog presents a brief history of the displays and an explanation of charset utilities and the displays; however, it assumes that the user is familiar with the PLATO or NovaNET system and its terminology. A system charset for NovaNET/ASCII terminals, a list of pictures in PSO charset file "pictures," and a list of examined charsets not included in this catalog are appended. (RP)

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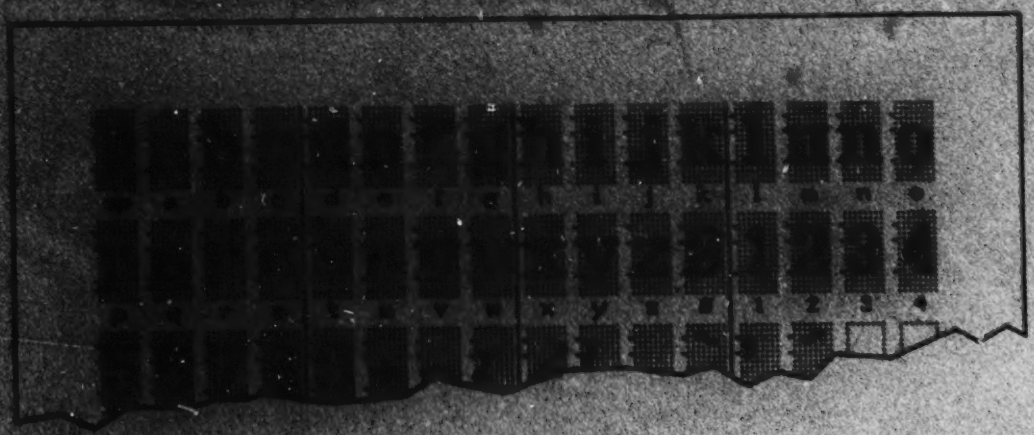
Computer-based Education Research Laboratory

CERL

CHARACTER SETS FOR PLATO/NOVANET
AN EXPOSITORY CATALOG



JOHN B. GILPIN

CERL REPORT E-32

AUGUST 1987

University of Illinois at Urbana-Champaign

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Character Sets for PLATO/NovaNET

An Expository Catalog

John B Gilpin

PLATO Education Group
Computer-based Education Research Laboratory
University of Illinois at Urbana-Champaign

August 1987

ACKNOWLEDGMENTS

Albert Liu made this publication practical by providing means for making screen prints of high-quality from the output of a Micro TUTOR program. He found a way to keep the display-generating program and the screencopying program in resident memory at the same time, and to switch back and forth between them without having to reload. I appreciate the interest he took in the problem and the effectiveness of his solution.

The prints are made on a Hewlett-Packard LaserJet® printer, using printing routines by Albert Liu based on earlier work for other printers by Elaine Avner and Mike Berger.

Thanks to Joan Phebus for running many of the screen prints and helping with the typescript, and to Wayne Wilson for preparing the cover. Elaine Avner, Celia Kraatz, Albert Liu, and Martin Siegel read the manuscript and provided helpful advice.

Finally, special thanks to Martin Siegel for encouraging me to bring this project, for which the original design and programing was done so long ago, to a satisfying completion.

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All rights reserved. No part of this book may be reproduced in any form or by any means without permission in writing from the author. Exception: Owners of this publication may make copies of the keyset diagram and matrix display worksheets located on the last two pages of this book for use in their work.

The format used in this publication to display the dot-by-dot structure of an entire character set on a single page is copyrighted. It may not be used--in a computer program, printed document, or otherwise--without permission in writing from the author.

The PLATO® system is a development of the University of Illinois.

PLATO® is a service mark of Control Data Corporation

The NovaNET℠ system is a development of the University of Illinois.

NovaNET℠ is a service mark of University Communications, Inc.

PURPOSE

The PLATO® and NovaNET℠ computer-based instructional systems use a fixed system character set ("normal font") and an author-definable character set ("alternate font"). The alternate font lets the author construct his own symbols, bitmapped pictures, and the like, and has seen many imaginative uses, including Armenian text, cartoon characters, choreographic notation, and random dot patterns.

This catalog covers charsets where each char is a meaningful independent unit--mainly alphabets in different sizes and styles. Not covered are pictures and oversize or partial symbols that require a microtable or specialized routines for their application. (For example, the bold characters at about size 2.5 from file "typeface", which require several -char-s per character, are not included.) Also not included are foreign language charsets (other than Greek, which is conceived to have some general interest). Foreign languages involve special problems and are of interest to a much narrower audience. They may be covered later in a separate publication. (However, see Appendix 3.)

The tradition of sharing character sets goes back to early PLATO III days when Elisabeth Lyman kept several character sets on paper tape in her office for lending to users. For many years, PSO has maintained files of charsets for users to reference, or copy and modify, and sometimes users release character sets directly, as in file "gothic". Most of the charsets in this catalog are from the PSO files "charsets" and "alphabets". In addition, there are seven from user files and one from PSO file "pictures". Without a doubt, there are many more character sets out there that deserve dissemination. Authors are urged to submit such charsets to PSO or otherwise to make them available. If there are additional files like "typeface" and "gothic" that I have overlooked, please bring them to my attention.

As the number of available charsets grows, the selection process becomes increasingly unwieldy. To determine whether a character set suitable for some purpose exists, it is necessary to load and inspect candidates one after another. Side-by-side comparisons require more than one terminal, or access to a screen printer. (A form of character matrix display is available via line printer, but its products are very large--more than a foot by four feet--and not very easy to use.)

Furthermore, since the charset titles were chosen in a necessarily uncoordinated way by the charset creators, they are sometimes misleading. For example, one might suppose that three charsets named "large", "larger", and "largest" would form a matched triplet ordered by size. However, examination reveals that, in fact, "larger" is generally smaller than "large", and "largest" is in a style quite different from the other two. Likewise, it can be startling to find that many chars in a charset called "4x7 chars1" are in fact 6x8.

This publication is intended to allow users to determine quickly (1) whether there is a character set already available that is suitable for a given use, (2) whether there is one available that might be copied and modified to make it suitable, or (3) whether concepts from more than one character set might usefully be combined. It can assist new creation by allowing a designer to quickly scan the different approaches that other designers have taken to a given character or set of characters.

The user of this catalog is assumed to be familiar with the PLATO or NovaNET system and its terminology. See AIDS for further information about "access characters", "microtable", or any other matter that may be unfamiliar.

It is my hope that this publication, by presenting character sets in a format that can be reviewed quickly and easily, will reinvigorate the utilization and sharing of character sets, and the design of new character sets. Readers who would like to obtain prints of charsets not included here may pnote "gilpin/pcp/cerl". Each charset must reside in a file that I can inspect and that has the requestor as last editor (or it must reside in a file that, like "typeface", is advertised as an open file). Requestors not reachable via University of Illinois campus mail should send a self-addressed, stamped envelope.

Finally, a reminder that it is courteous for an author who uses a charset, either in original or modified form, to provide appropriate mention of the charset author(s), if known, in any lesson credits.

HISTORY

The constraints imposed by the desire to display the dot-by-dot structure of an entire character set on a single screen led me, after a few tries, to the format used in the character matrix displays. After I had settled upon it, I realized that its conventions for displaying a character closely resembled those of the original PLATO III charset editor, created by Scott Krueger in about 1966.

Scott's program deserves mention because it was, most likely, the first online character set editor in the world. It is especially significant in the history of PLATO because it was, I believe, the first instance where the special powers of PLATO were applied to PLATO's own development. It was followed directly by the development of PLATO's first online text editor, MONSTER*, by Richard W Blomme and Scott Krueger.

My work on a TUTOR program to produce character-matrix displays was done early in 1982. It demonstated the value of a single-page format, but it was inconveniently slow and, because of the limitations of the system charset editor in converting charsets to -char- commands, very awkward to use. I made a Micro TUTOR version of the program that was much easier and faster to use, but one incompatibility or another prevented the practical production of screen prints with every combination of terminal and printer that I was able to find.

I have used the TUTOR version of the program as occasion presented itself between 1982 and now, both in my own work and to facilitate the work of others. For example, Judy and Bruce Sherwood used several prints while constructing ASCII character sets during the spring of 1983. Each such use strengthened my conviction that the format was worthy of wider dissemination.

Recently Albert Liu became interested in the problem of screenprinting output from the Micro TUTOR program. He solved it and his method, using an IST terminal and an HP LaserJet printer, produces prints of high quality at reasonable speed. It made this publication, at long last, possible.

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* Multiple-user Online Nifty Student-Terminal Editing Routine ("student-terminal" because it was not necessary to be at the computer console to use the program!).

CHARSET UTILITIES

Following is a list of user-designed utilities related to character set selection, modification, and design.

- "cschars", a set of charset options similar to, but not the same as, those provided via SHIFT-L from Author Mode
- "recover", a utility that can sometimes recover a deleted charset, and that can convert a large charset to -char- commands
- "showfont", a -use-able routine that displays keyset layouts in a style somewhat like that used in this publication
- "charedit", a general purpose charset editor (this utility lacks HELPs, but uses conventions similar to the system charset editor)
- "multchar", a powerful instrument for making char-based pictures of any available shape and size

Especially notice the usefulness of the multiple-char editing option available in the system charset editor and, with somewhat enhanced options, in "charedit". Multiple-char editing was devised, of course, to allow convenient design of items requiring more than one char, but it can also be useful for making parallel modifications to single chars on a batch basis. It is, for example, much less tedious to reposition a batch of 24 chars via multiple-char editing than it is to do the same job by means of single-char-modify!

On the last two pages of this book are a large keyset layout worksheet and a character matrix display worksheet. Owners of this publication are granted permission to make copies of these pages for use in their work. Since these worksheets are in a certain sense "charset utilities", perhaps a few words about them are in order here.

Design of a straightforward charset with a standard complement of letters, numerals, and punctuation marks may occasion no use for them at all. A non-Roman alphabet, on the other hand, will likely profit from some preplanning with both. An extremely full charset almost certainly will profit from preplanning with at least the matrix display sheet.

The use of the matrix display sheet is to plan which slots to use for which characters. (It is *not* intended for laying out character shapes; that is much more easily done right in the charset editor.) The matrix display sheet can be especially useful when rearranging a character set and/or pulling in characters from several different character sets. A few minutes of preplanning with the worksheet and a colored pencil or two can obviate much potential confusion and frustration.

EXPLANATION OF THE DISPLAYS

Each charset presentation (except for "standard" and "internal") occupies a pair of facing pages and consists of several parts.

On the lefthand page:

- a keyset layout showing which keypress produces which char
- a sample of text using the charset (when that is useful)
- a display of all the characters in normal size
- sometimes (when a text sample is not useful), some brief comments

On the righthand page:

- a display of each character as lit and unlit dots in a character matrix

The character matrix display uses the following conventions. A space char shows as what it is--a character matrix with no dots lit. Character slots that are available but not used by a particular charset are indicated by showing just a dotted box where a character matrix could be but is not. The two unavailable slots are indicated by showing neither a matrix nor a dotted box.

Along the right side of the character matrix display is a legend providing basic information about the displayed charset: file,block Date last changed Author(s). The "file,block" is always present, but the other entries are omitted when the information is not known. Note that the "Date last changed" is not necessarily indicative of the date of creation, but may simply record the date when the charset was copied to its present location.

On the keyset diagram, keypresses not associated with any altfont character slot are filled solid. Keypresses not used by a particular character set show as empty positions. Keypresses associated with space characters show a dotted border. These conventions differ from those used on the character matrix displays, but both approaches suit their purpose in that they make their respective diagrams easy to read. When a character set is not a straightforward Roman alphabet, a label is added below each keytop to identify it.

The display of all characters in normal size uses analogous conventions: the unavailable slots (63 and 127) are shown filled solid, unused char slots are shown as empty positions, and space chars are indicated by a dotted border.

The space bar on the keyset diagram shows two chars associated with the SPACE keypress. This is because system terminals have *two* space chars and, for hardware reasons, they both are used to provide spaces in text (one when the preceding character is from the "lower" char memory in the terminal, the other when it is from the "upper" char memory). The author can redefine either or both space chars if he wishes, and sometimes this is useful (see, eg, "readonly" and "smallnums"). But if your charset is used to plot text, ordinarily the two space chars should be left alone.

COMMENTS

Among the Utility charsets, "readonly" is important because it documents the fixed system characters, and "standard" is important because it documents the customary char/key associations. ("standard" would meet its definition slightly better if "\" and "&" were interchanged; the discrepancy is a historical artifact.)

Character matrix displays are omitted for "standard" and "internal" because the character shapes (except for five diacritics noted in the comments with the charsets) are exactly the same in those charsets as in "readonly". (Use "underline" to inspect the alternate character shapes of the five diacritics.)

"langchars" is a quite complete general-purpose charset that also contains enough keytop chars to allow symbols for all the system function keys to be plotted. "pictures,keytops2" is devoted to a complete alphabet of (different) keytop-making characters.

On the first page, I said that this catalog covers charsets where each char is independent. "print" and "gothic" are partial exceptions to this rule. "print" has four characters ("w" and "W", "m" and "M") that require more than one char. "gothic" uses two chars for every one of its uppercase letters, but it is included, nevertheless, because it is such a striking and well-known charset. (The "charsets,gothic" given here differs from "gothic,gothic" in the treatment of uppercase; execute lesson "gothic" for information on the alternative version.)

"lllchars,gerchar" is a perfectly serious charset when used to render German as it used to be printed/written. In this listing, it is viewed as a relative of "gothic".

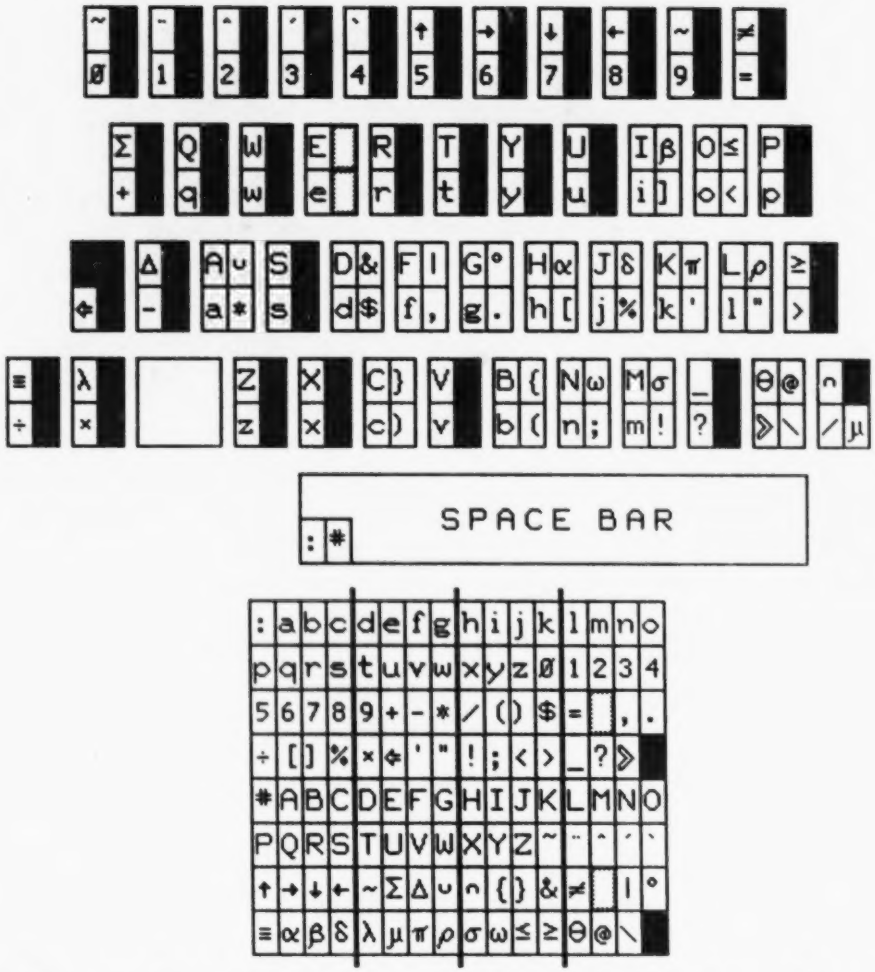
Some alphabetic charsets have letters only in the lowercase slots, and at least one ("plm") has uppercase and lowercase letters that are evidently intended to be used independently of each other. The text sample is included in all of these cases, on the reasoning that it provides useful information. However, the text sample is *not* specially edited to compensate for peculiarities like those just described. A charset that lacks uppercase letters, or that takes two chars to make a letter, or that lacks punctuation, will show obvious flaws in its text sample. These flaws were deliberately allowed to stand, on the reasoning that special editing to avoid them could miscue a hurried reviewer.

Keyset diagrams are given even for a few charsets that obviously are intended to be used with -plot-, in the expectation that some reviewers will find them useful.

The charsets are ordered to make comparison of them as straightforward as possible. Because their names don't necessarily suggest their relationships accurately, the order of the *names* may in a few cases appear strange.

The charsets are organized in groups in the Index. In the catalog they appear consecutively, without any breaks.

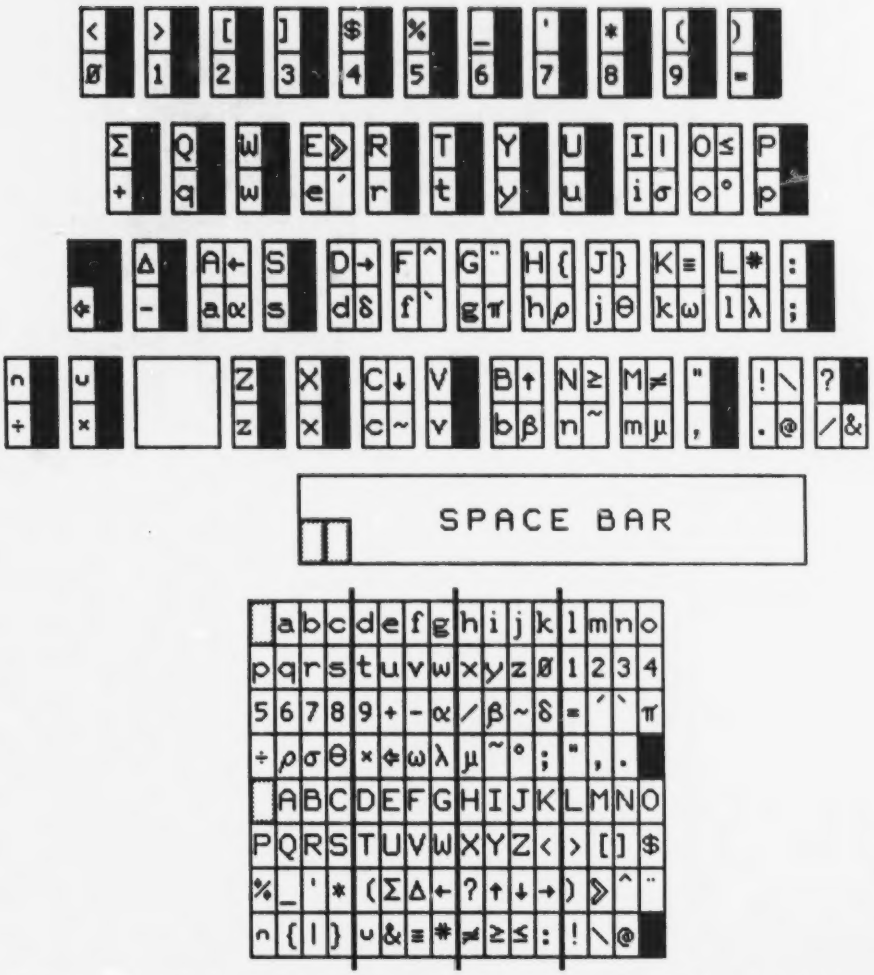
The page number given for a charset in the Index appears on both pages of a charset's layout. The number may be thought of as being associated with the charset itself as well as with the pages. ("standard" and "internal" have only one-page displays; these face each other on pages 2 and 3.)



charsets,readonly

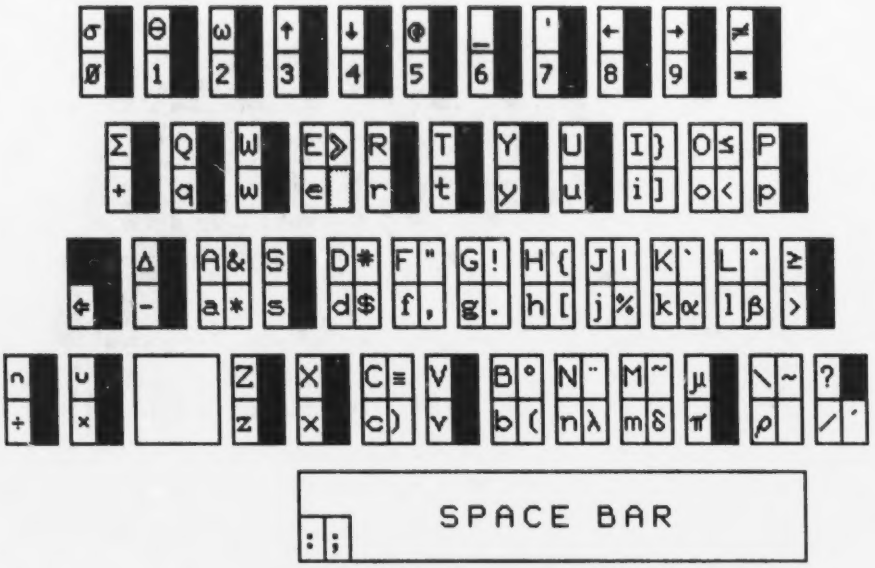
"readonly" orders replicas of the fixed system characters as those would appear if their (read-only) memory were displayed. Compare with the "ROM Scan table" in "testor". Note that the five diacritics following "Z" look different in that table on different terminals. "readonly" has the AST and PLATO IV forms. (See also "standard". See also Appendix 1.)

PSO staff
27 Sep 77
charsets,readonly



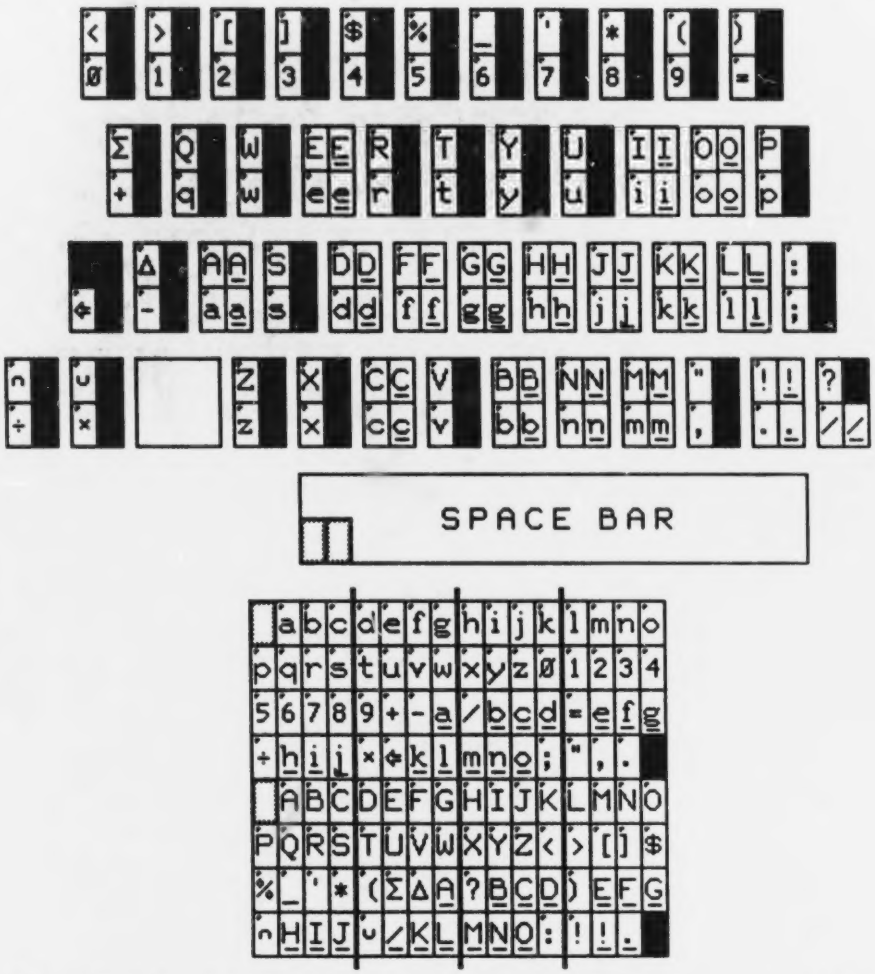
charsets,standard

"standard" orders replicas of the fixed system characters to make the keypress for each char match the normal-font keypress, insofar as possible. Compare the keyset diagram above with the standard keyset diagram given in AIDS or in the hardcopy "Summary of TUTOR Commands". The diacritics shown are PLATO V and IST style. (See also "readonly".)



charsets, internal

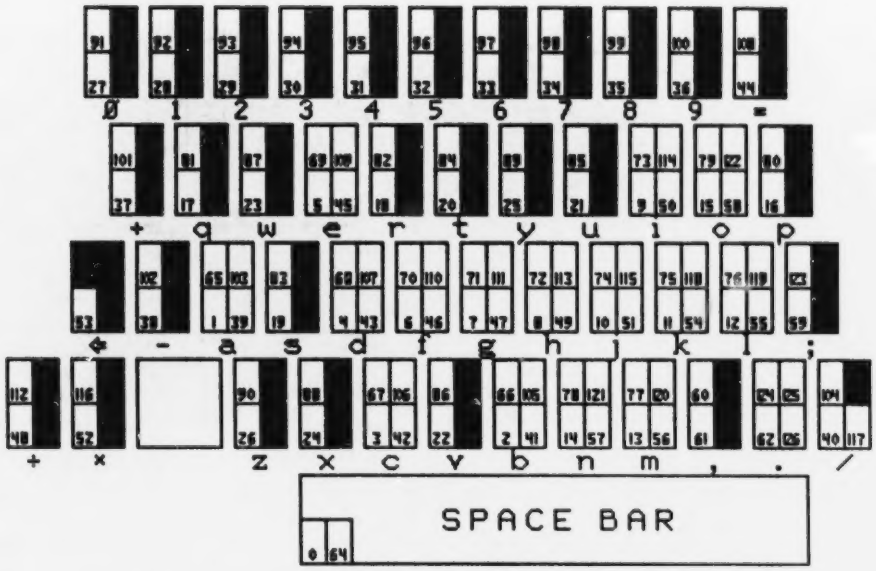
"internal" orders replicas of the fixed system characters to make the keycode for each char's key match the char's slot number, insofar as possible. Compare its order with the list of keycodes given in AIDS or in the hardcopy "Summary of TUTOR Commands". The character shapes are the same as those in "readonly" (and "standard", except for diacritics).

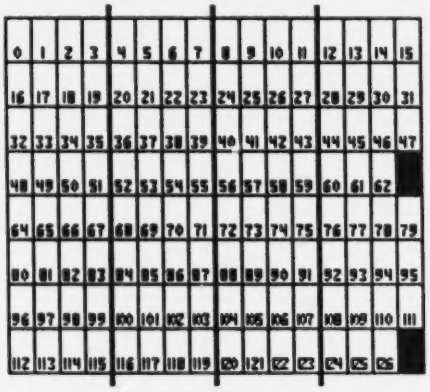


charsets,showchars

"showchars" identifies the keypress that is associated with each slot. That is, the slot associated with the keypress "access-shift-a" contains a symbol meaning "access-shift-a" (namely: A). Access chars are marked with an underline, all others (except the two SPACE chars) with a special mark in the upper left corner.

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ← (k) (l) (m) (n) (o) ; " , . !
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
PSO staff
1 Feb 78
charsets,showchars

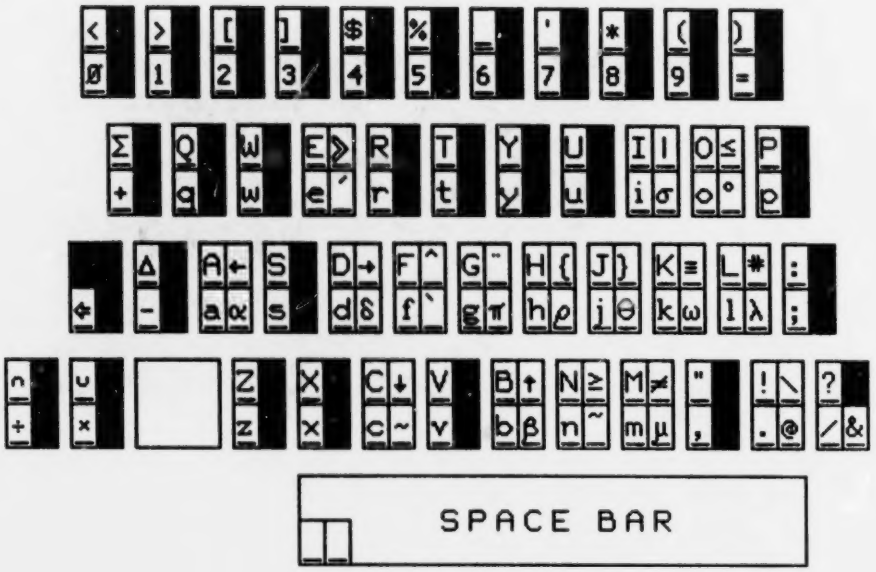




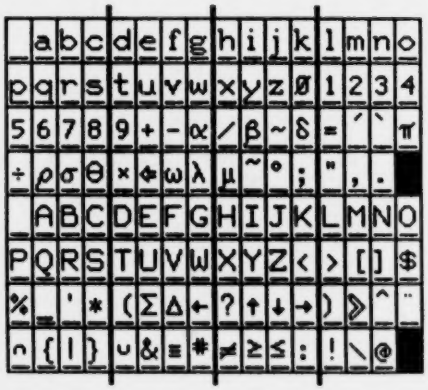
charsets,smallnums

"smallnums" identifies the slot that is associated with each keypress. That is, the keypress associated with slot 22 produces "22". Cf, the small numerals in "testor", which are from "smallnums". "smallnums" was originally designed to plot numerals as (labeled) points. -at wherex-3,wherey-2 - centers any smallnum exactly on the point (wherex,wherey).

0 sp
1 a
2 b
3 c
4 d
5 e
6 f
7 g
8 h
9 i
10 j
11 k
12 l
13 m
14 n
15 o
16 p
17 q
18 r
19 s
20 t
21 u
22 v
23 w
24 x
25 y
26 z
27 Ø
28 1
29 2
30 3
31 4
32 5
33 6
34 7
35 8
36 9
37 +
38 -
39 (a)
40 /
41 (b)
42 (c)
43 (d)
44 =
45 (e)
46 (f)
47 (g)
48 +
49 (h)
50 (i)
51 (j)
52 ×
53 ÷
54 (k)
55 (l)
56 (m)
57 (n)
58 (o)
59 ;
60 "
61 ,
62 .
63 --
64 sp
65 A
66 B
67 C
68 D
69 E
70 F
71 G
72 H
73 I
74 J
75 K
76 L
77 M
78 N
79 O
80 P
81 Q
82 R
83 S
84 T
85 U
86 V
87 W
88 X
89 Y
90 Z
91 <
92 >
93 [
94]
95 $
96 %
97 _
98 ¬
99 *
100 (
101 Σ
102 Δ
103 (A)
104 ?
105 (B)
106 (C)
107 (D)
108)
109 (E)
110 (F)
111 (G)
112 ↑
113 (H)
114 (I)
115 (J)
116 ↓
117 (/)
118 (K)
119 (L)
120 (M)
121 (N)
122 (O)
123 :
124 !
125 (!)
126 (.)
127 --
charsets,smallnums
29 Jul 87
John B Gilpin

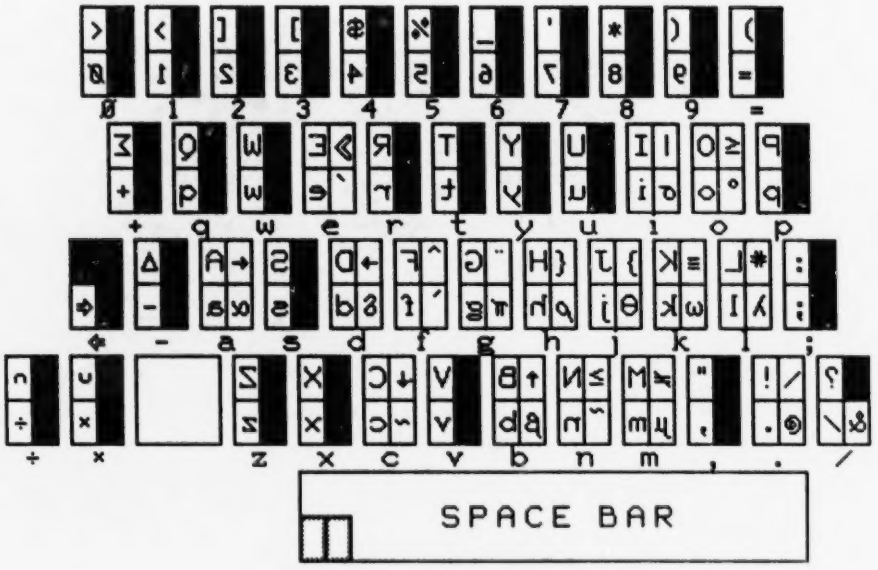


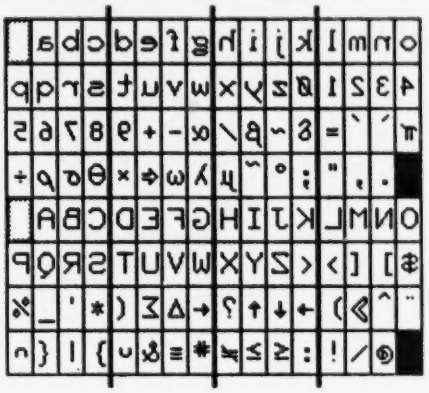
We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.



charsets,underline

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ⇦ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
∩ { | } ∪ & ≡ # ≠ ≥ ≤ : ! \ @ --
charsets,underline 25 Aug 82



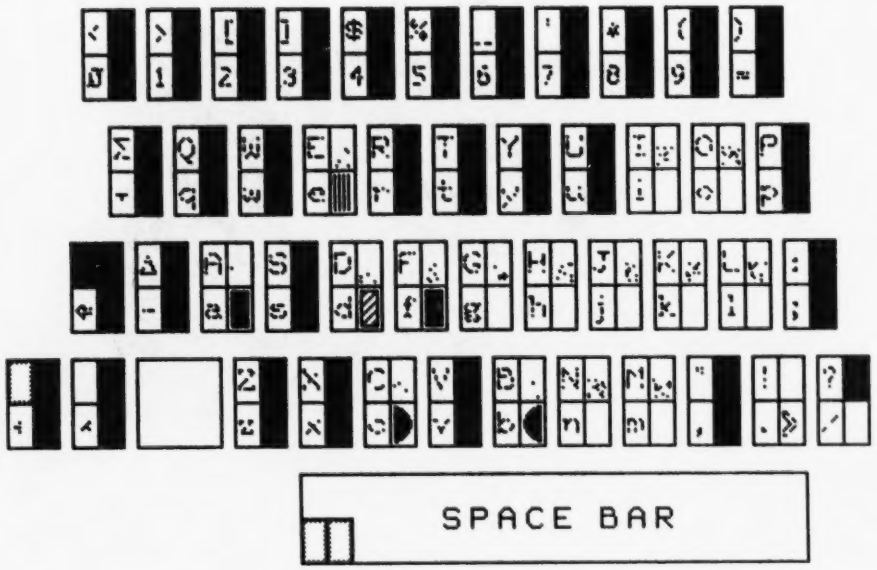


charsets,mirror

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ⇐ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ } | { ∪ ⊃ ≡ # ≠ ≤ ≥ : ! / ⊕
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,mirror
19 Mar 81

charsets, upsidedown

charsets,upsidedown 24 Mar 81



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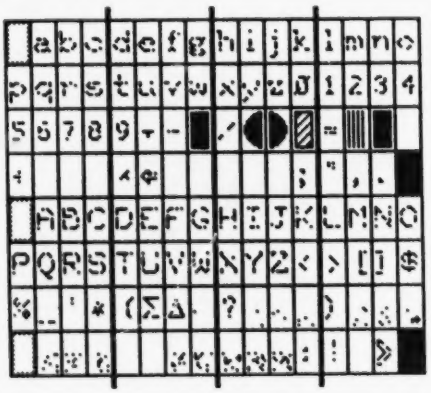
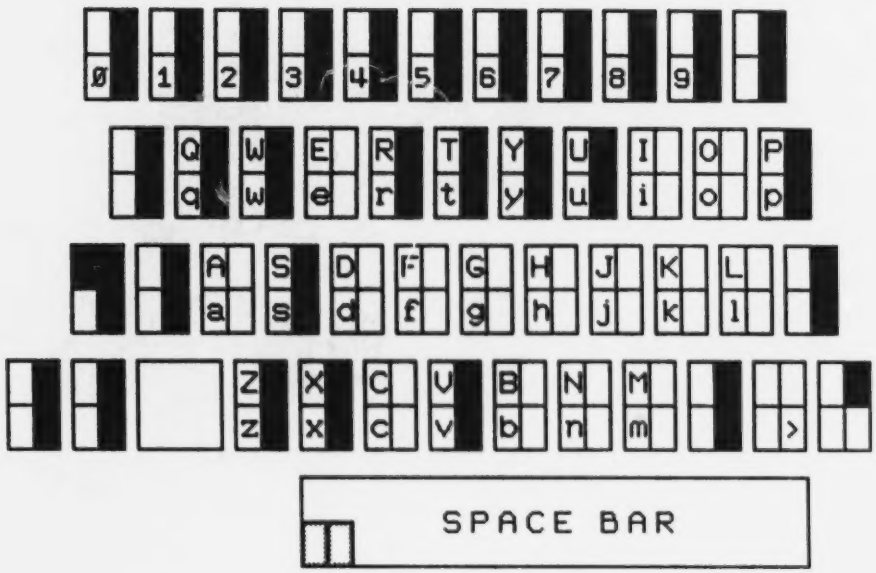
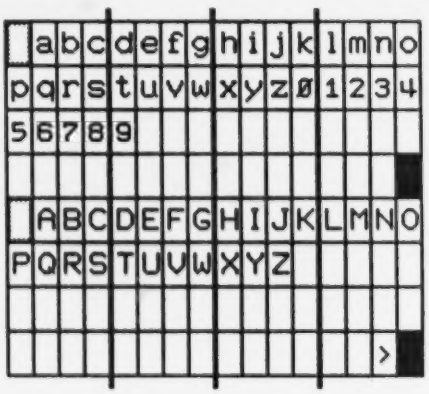


charmic,screenfail

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z Ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charmic,screenfail 1 Jul 76

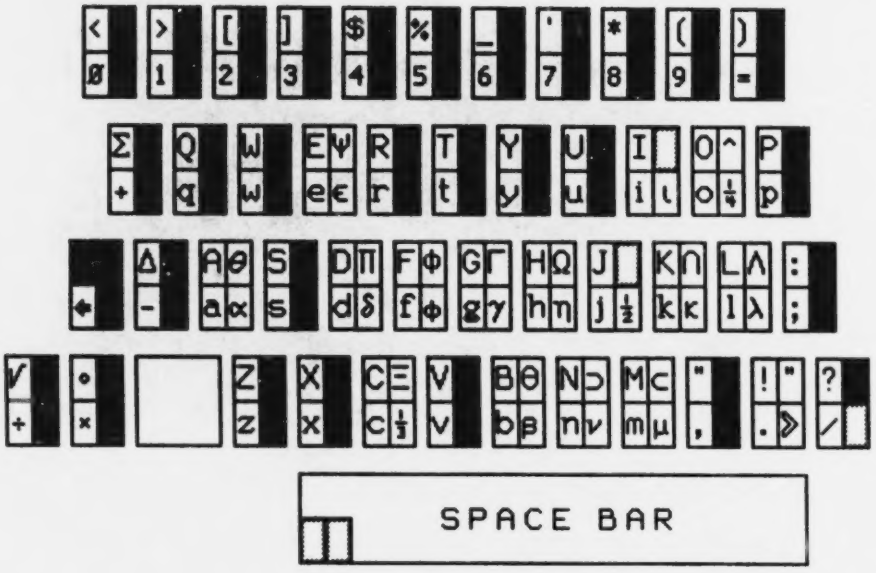


We the People of the United States in Order to form a more perfect Union establish Justice insure domestic Tranquility provide for the common defence promote the general Welfare and secure the blessings of Liberty to ourselves and our Posterity do ordain and establish this Constitution for the United States of America



charsets, larger

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,larger



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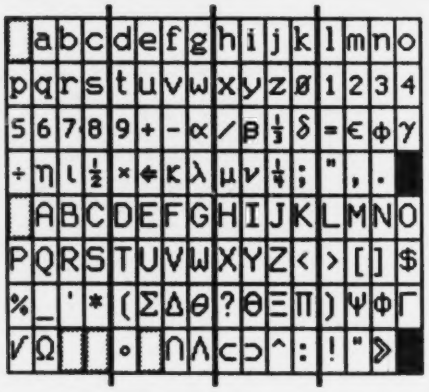
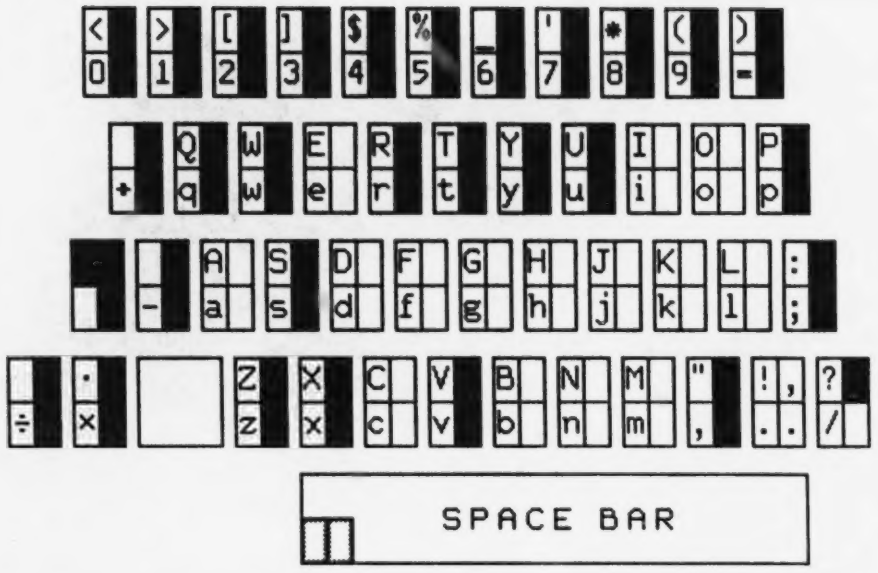


charsets, large

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
(H) (I) (J) (/) (K) (L) (M) (N) (O) : ! (!) (.) --
21 Jul 78
charsets,large



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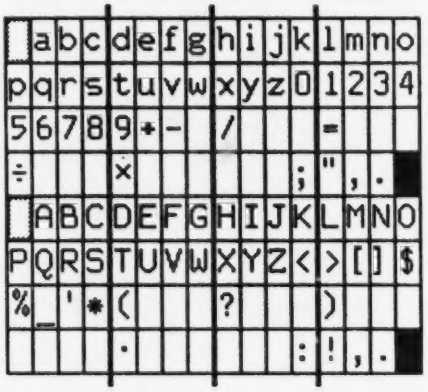
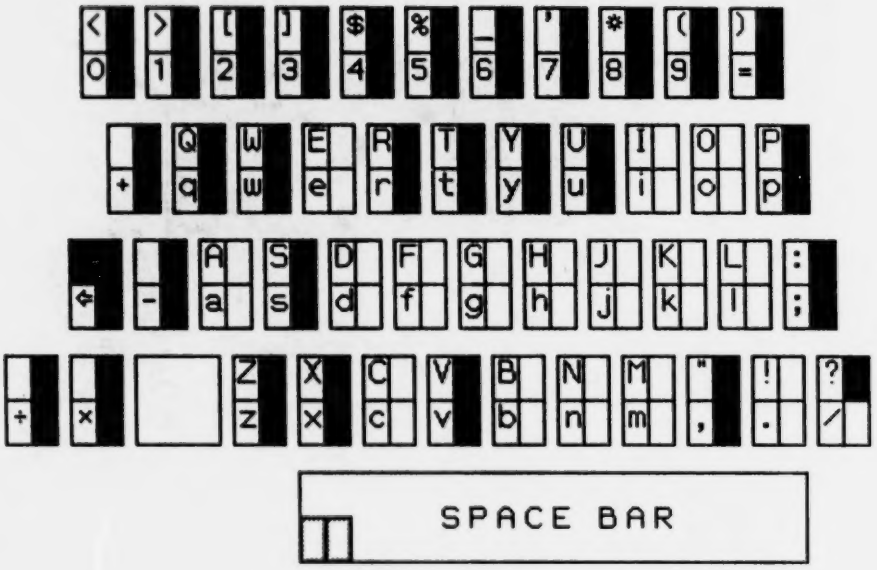


charsets,bigchars

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z 0 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
John B Gilpin
29 Jul 87
charsets,bigchars



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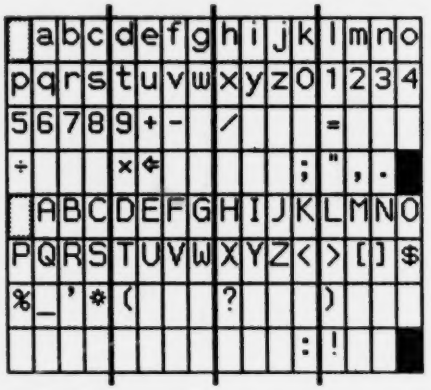
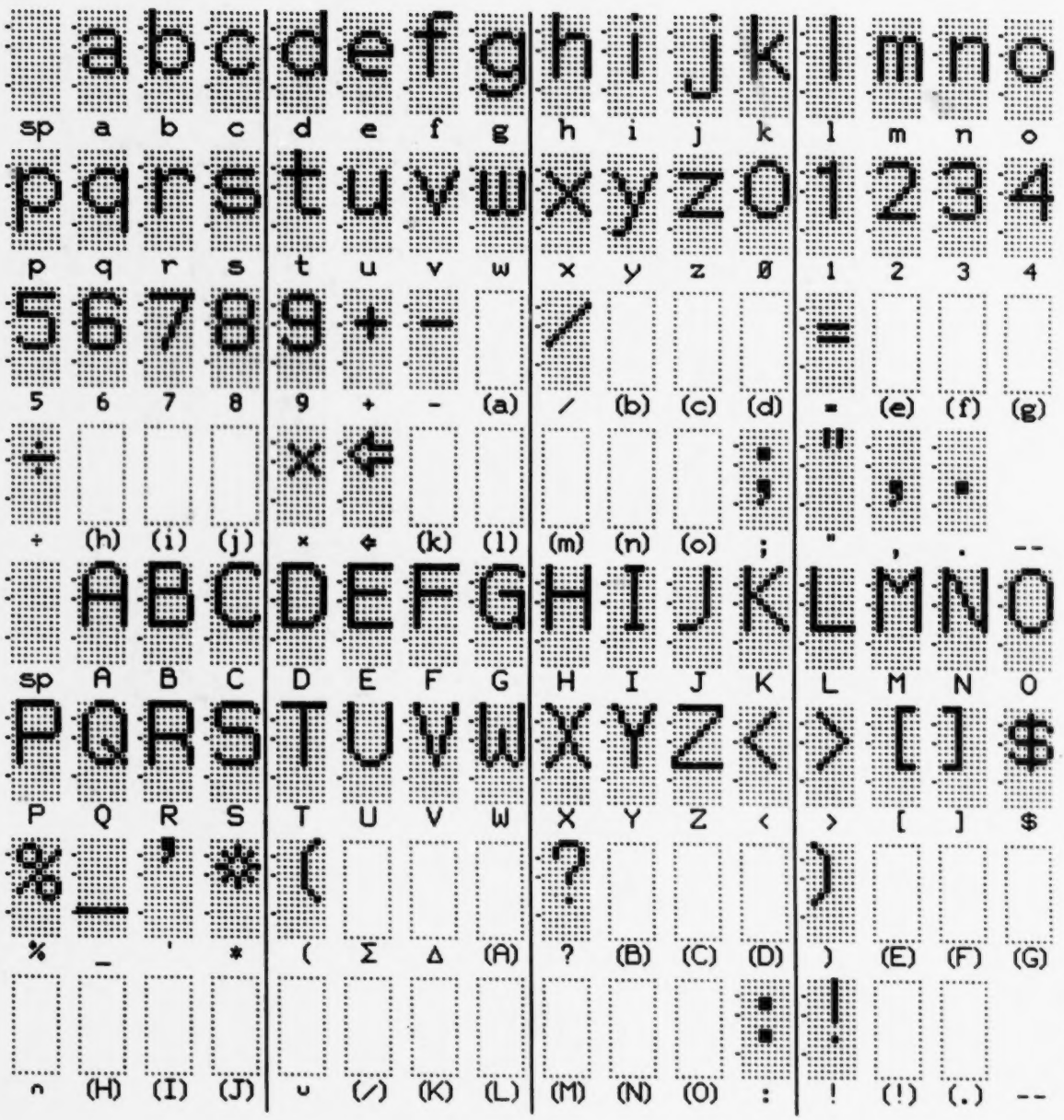
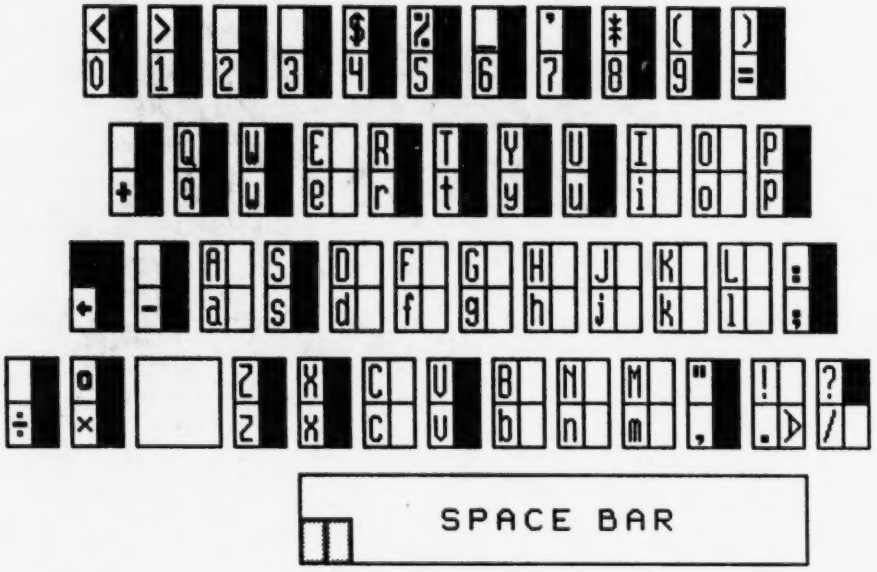


typeface, newchars


sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ⇐ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
▫ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
John Mendenhall
5 Jul 75
typeface,newchars



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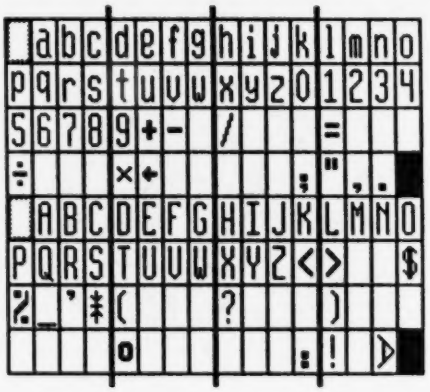
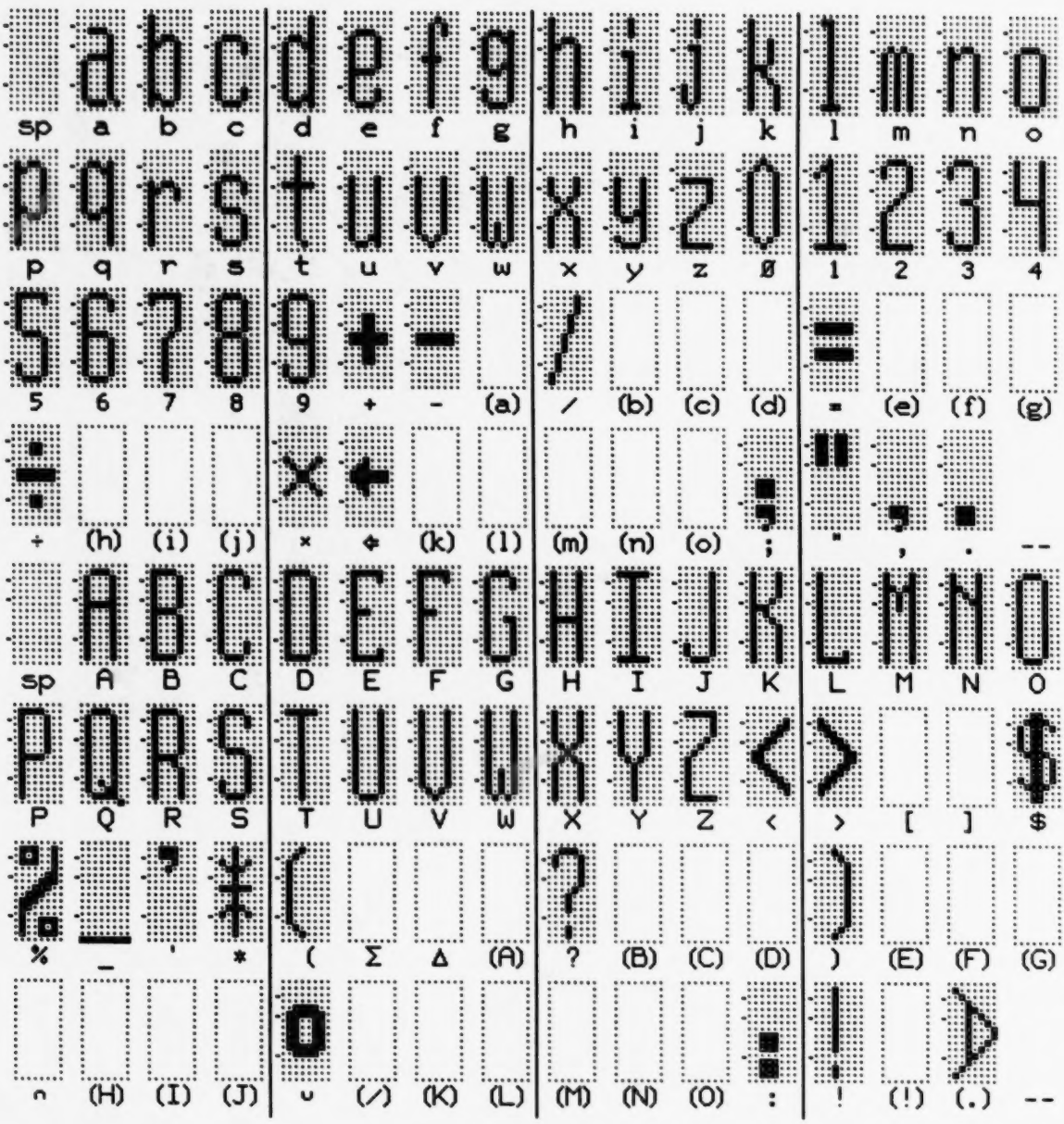
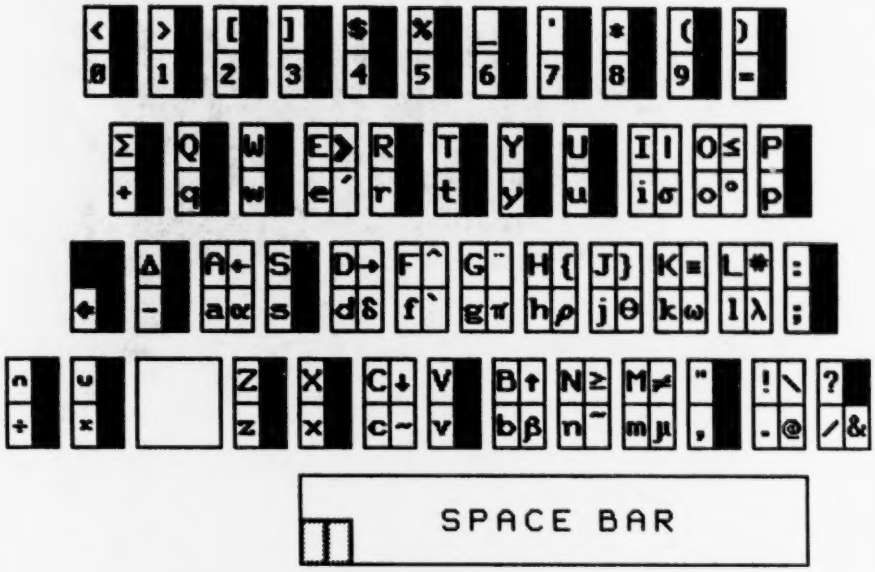


charsets, largest


sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ↔ (k) (l) (m) (n) (o) ; . , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
▫ (H) (I) (J) ▫ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets, largest



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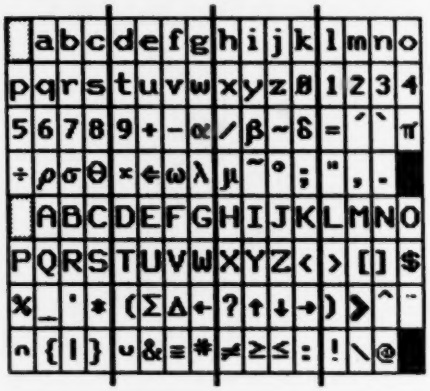
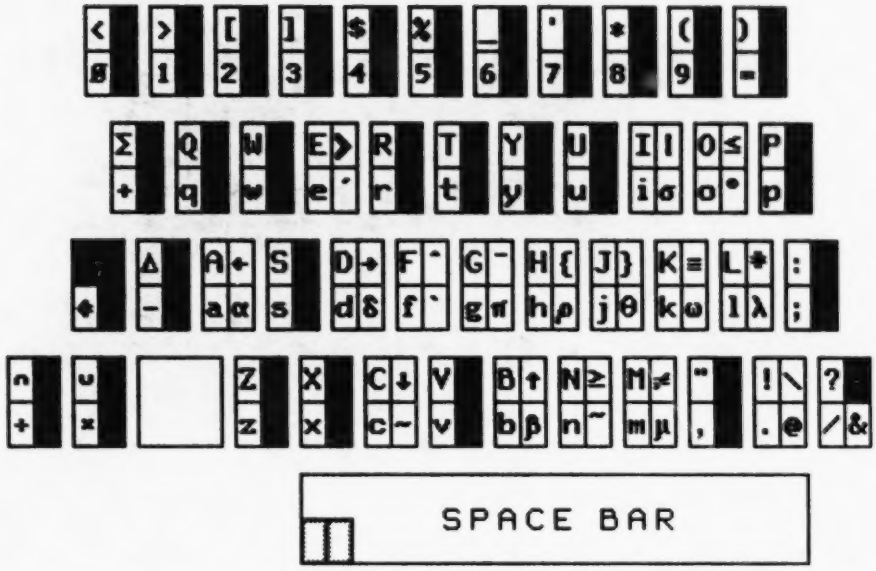


charsets, extended

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ß 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ← (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
∩ { | } ∪ & = # ≠ ≥ ≤ : ! \ @
∩ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
John Dennison
22 Jul 85
charsets, extended



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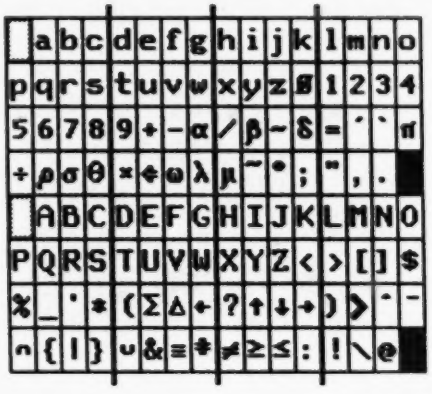
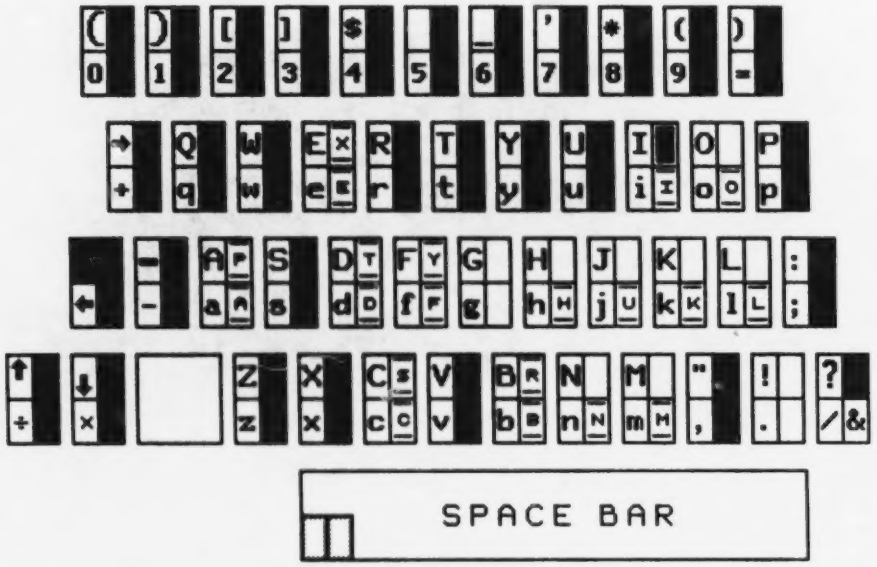


charsets,thick3

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × (k) (l) (m) (n) (o) ; - , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
∩ {(H) |(I) }(J) ∪ &(/) ≡(K) ±(L) ≠(M) ≥(N) ≤(O) : ! \(!) @(.) --
Douglas W Jones
16 Jan 80
charsets,thick3



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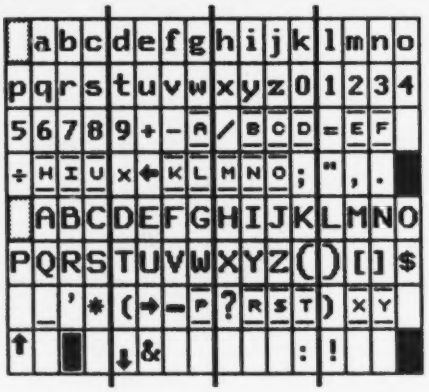
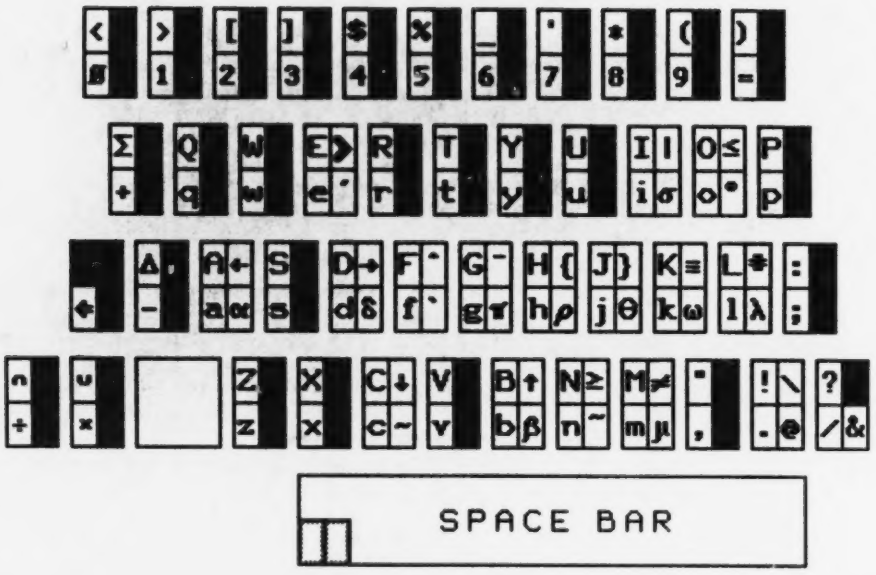


charsets, langchars

charsets,langchars 29 Jul 87 thick2, thick3, PCP authors



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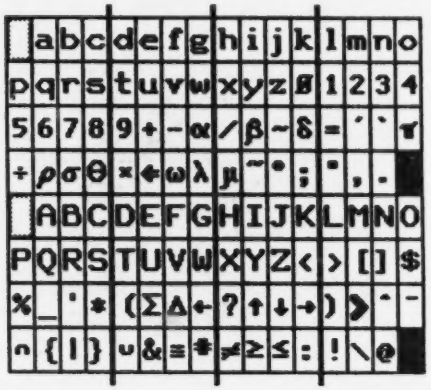
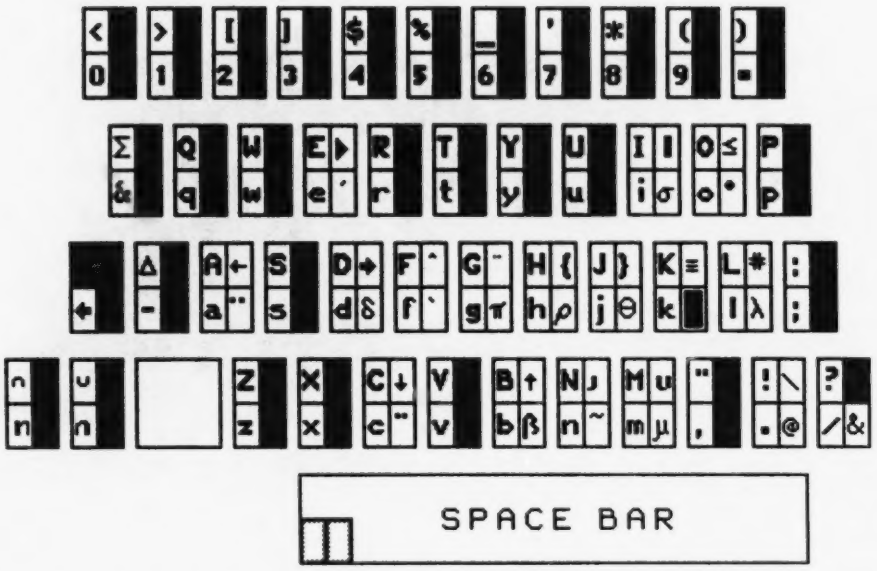


charsets,thick2

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × (k) (l) (m) (n) (o) ; ' , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
Andrew Shapira
22 Mar 82
charsets,thick2



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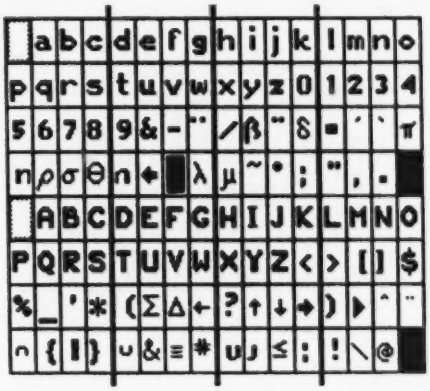
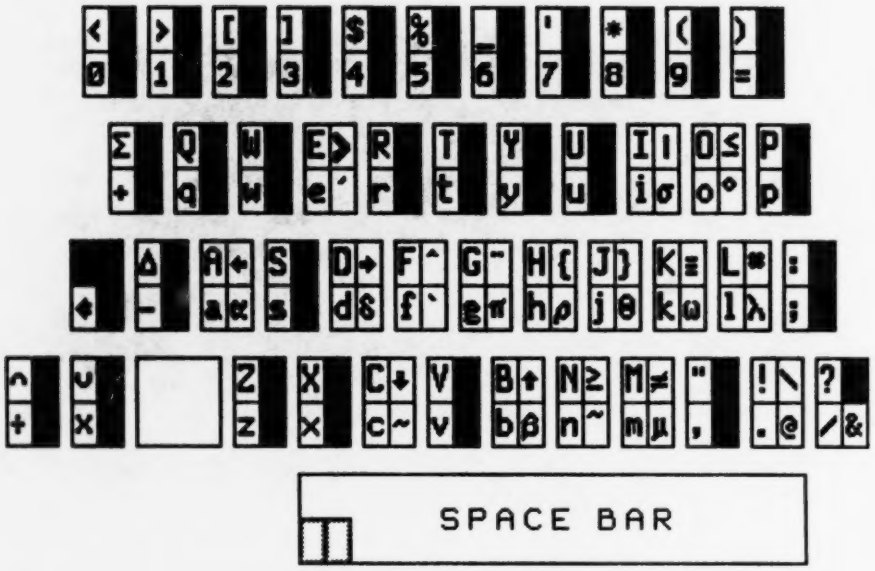


lllchars,bold

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z 0 1 2 3 4
5 6 7 8 9 & - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
6 Oct 76
llchars,bold



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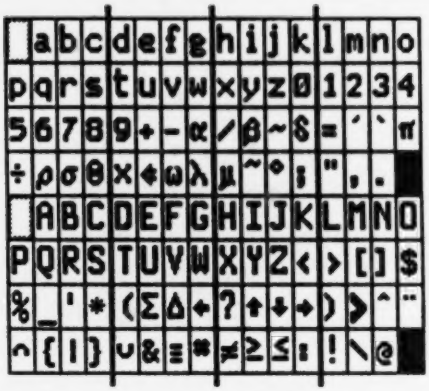
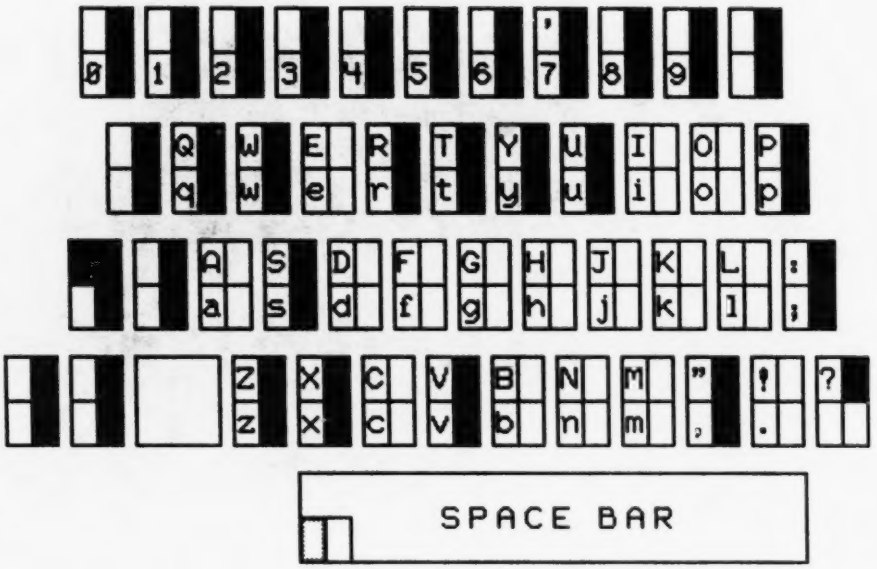


charsets,thick

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × (k) (l) (m) (n) (o) ; , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
Robert Woodhead
12 Nov 79
charsets,thick



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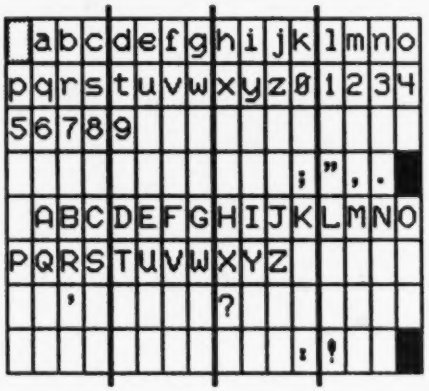
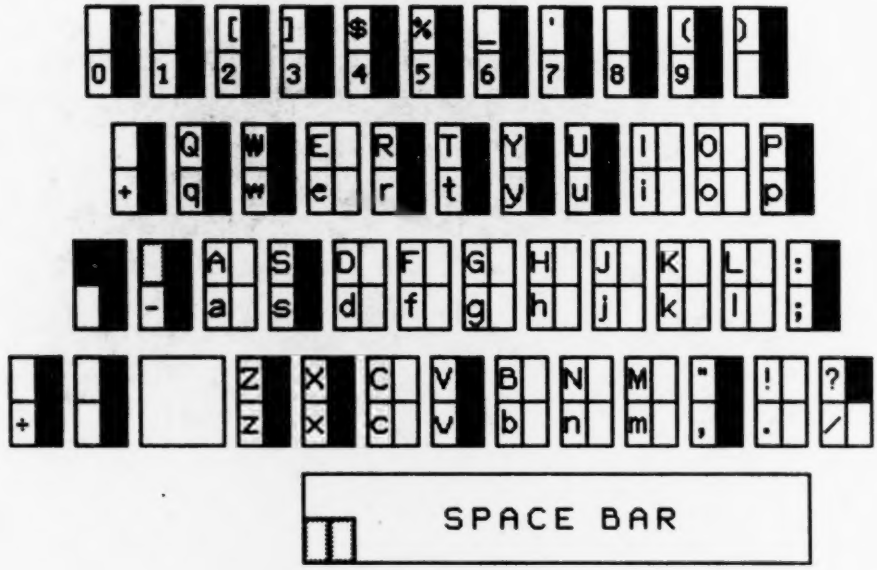


charsets, rounded

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ¢ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets, rounded



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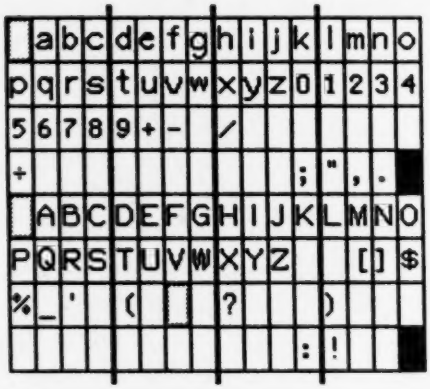
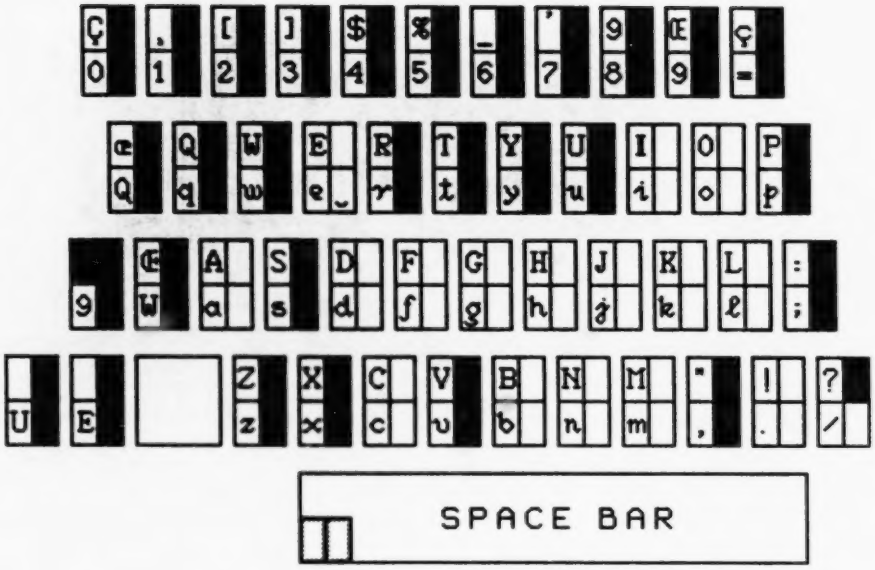


charsets,helvetica

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z 0 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,helvetica 20 Jul 77
Norman D Hinton



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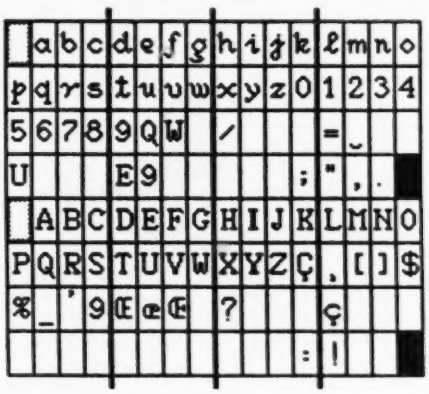
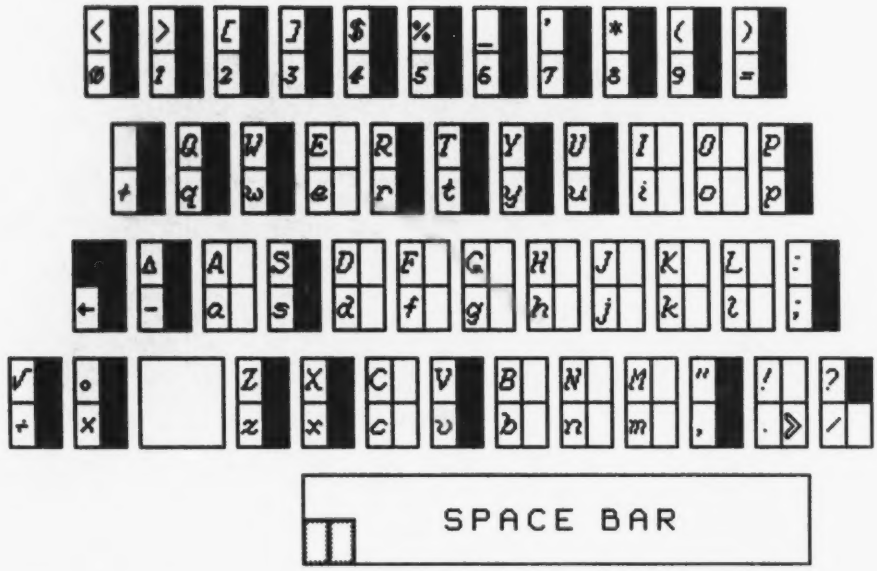


charsets,italics2

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z 0 1 2 3 4
5 6 7 8 9 Q W (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,italics2 30 Jun 78



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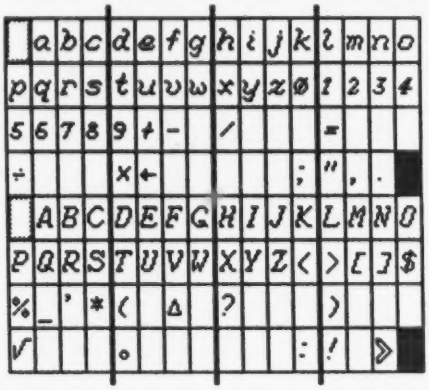
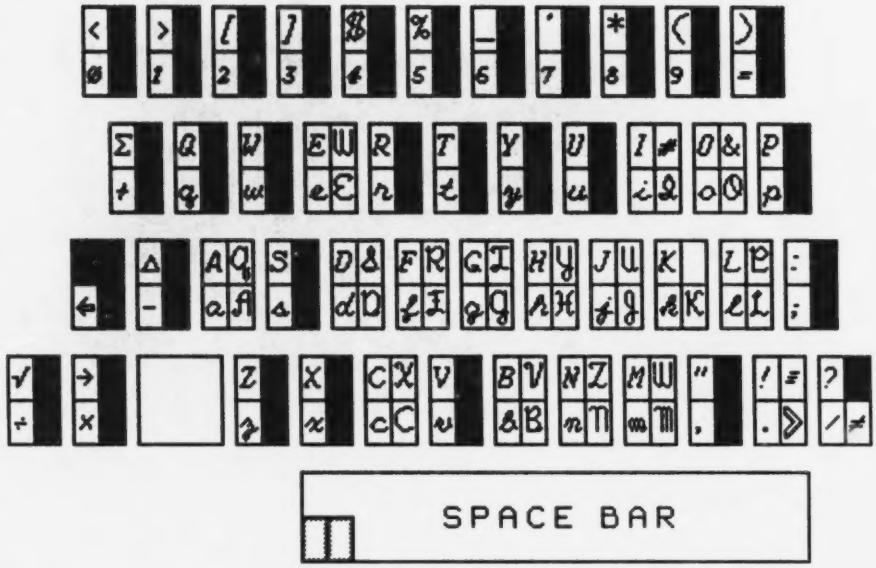


charsets,italics

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ← (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ○ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
Robert Bohn
30 Apr 86
charsets,italics



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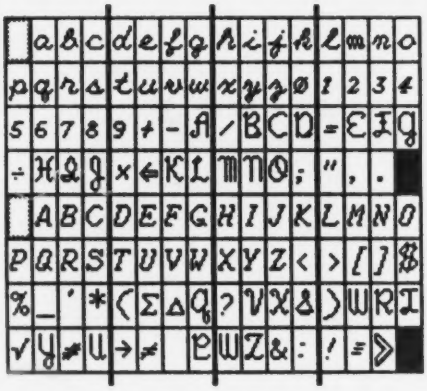
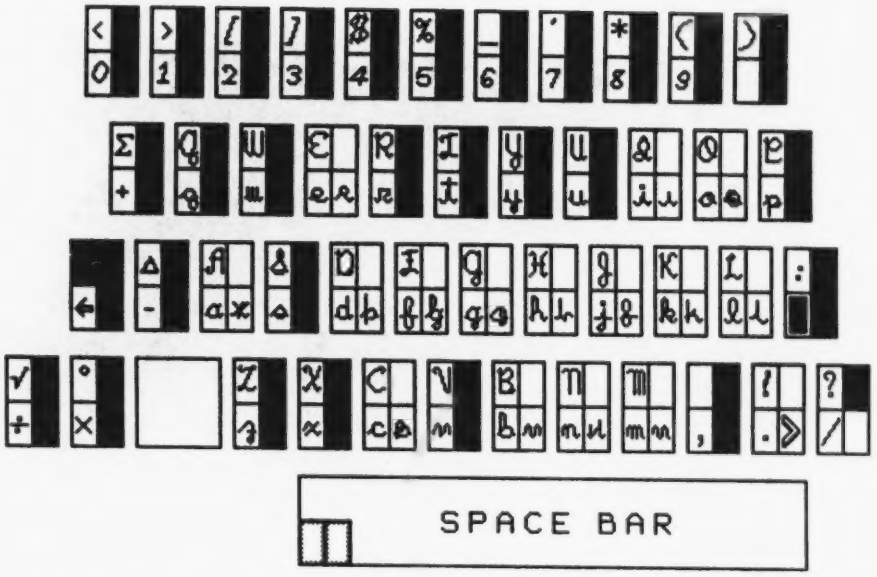


charsets,script

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ⇐ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) → ≠ (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,script 4 Jan 79



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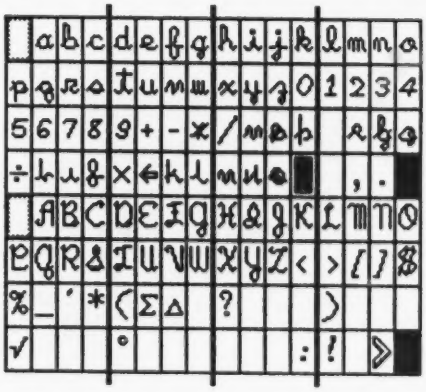
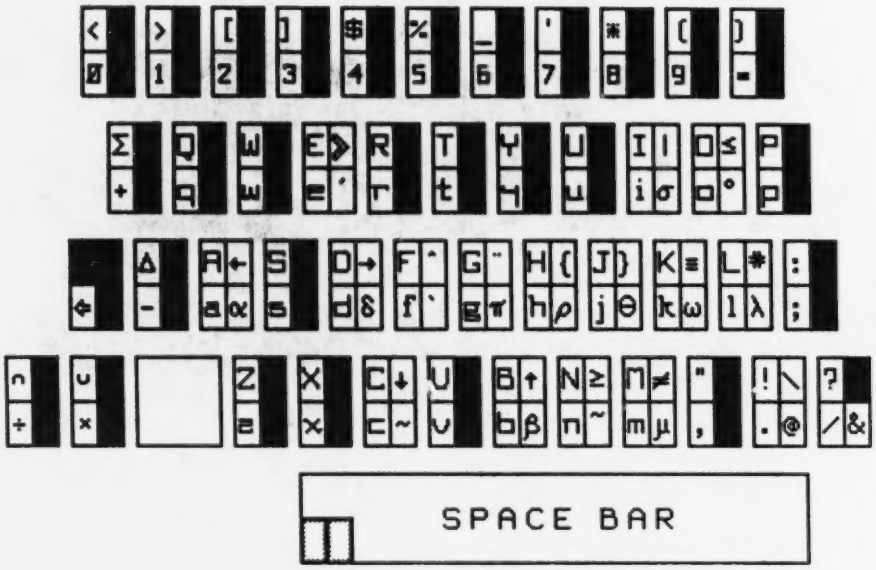


alphabets, script

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) ▪ (e) (f) (g)
÷ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; ' , . !
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
√ (H) (I) (J) ○ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
25 Sep 75
alphabets,script



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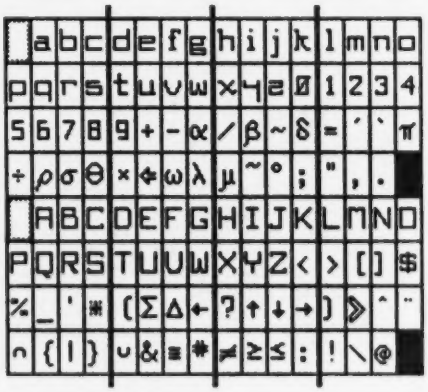
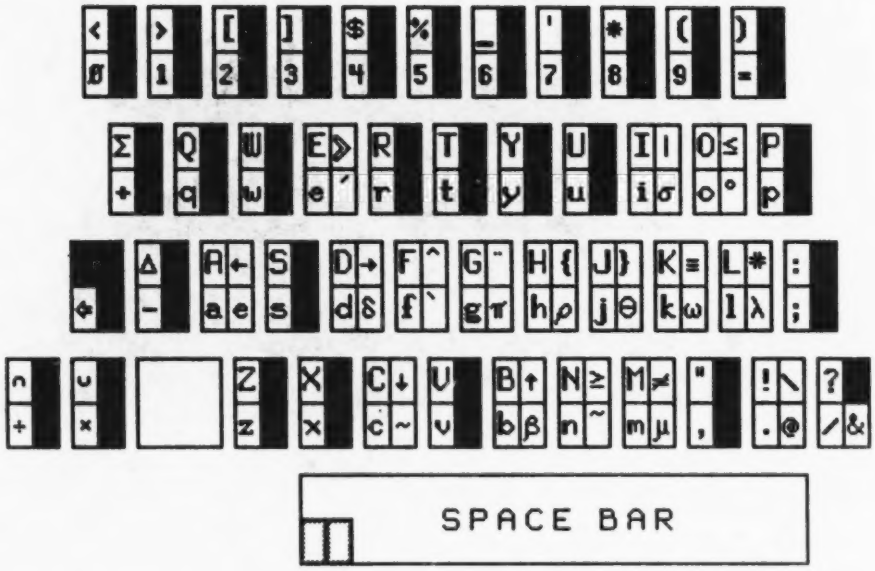


charsets,square

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ← (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
∩ { | } ∪ & ≡ # ≠ ≥ ≤ : ! \ @
∩ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,square
26 Sep 78
Howard Berkson



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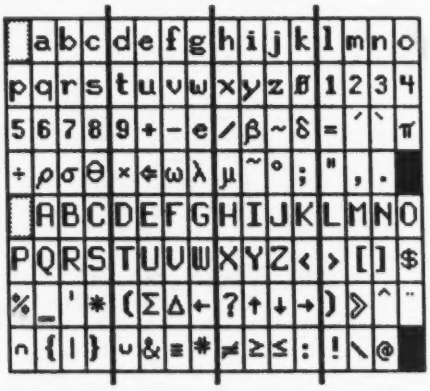
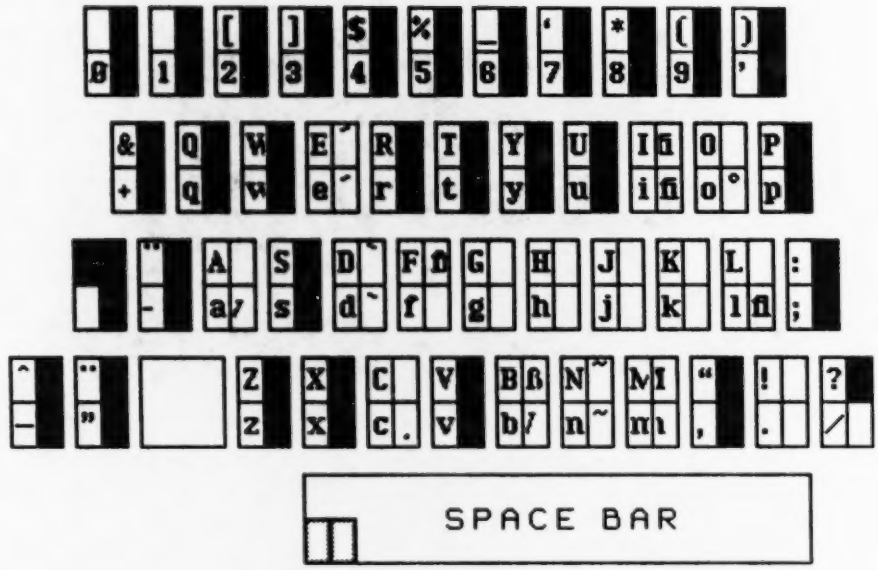


charsets,semideco

Dave Fuller
28 Jan 81
charsets,semideco



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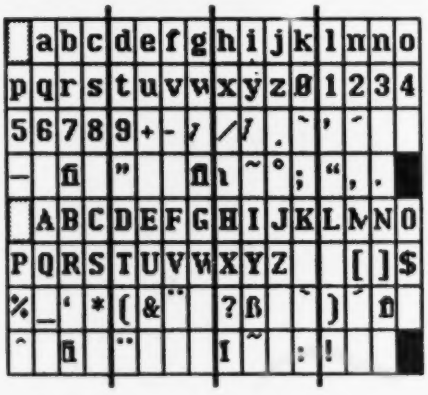
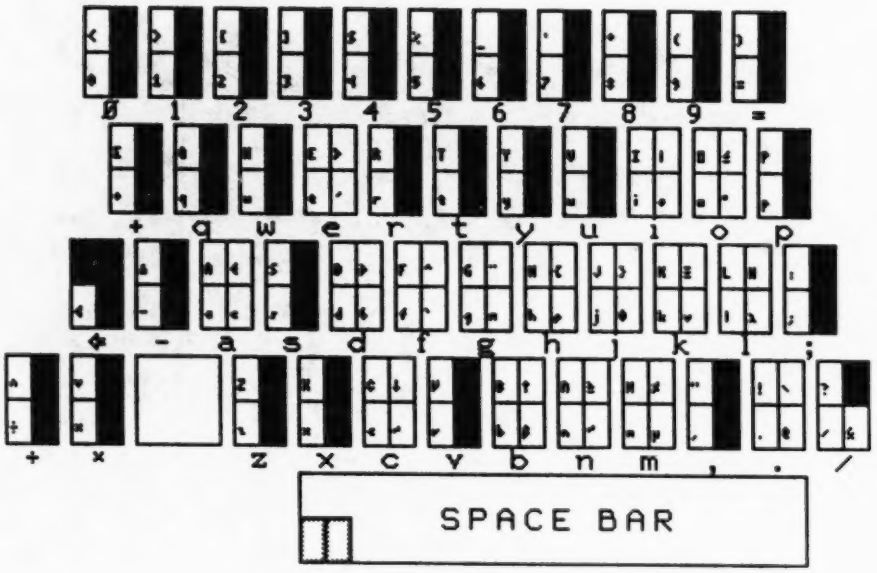


charsets,print

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; ' , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
^ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
5 Sep 79
charsets,print



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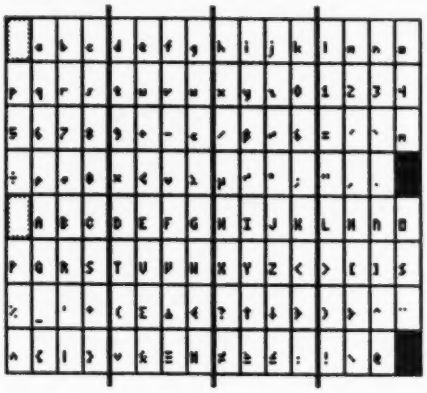
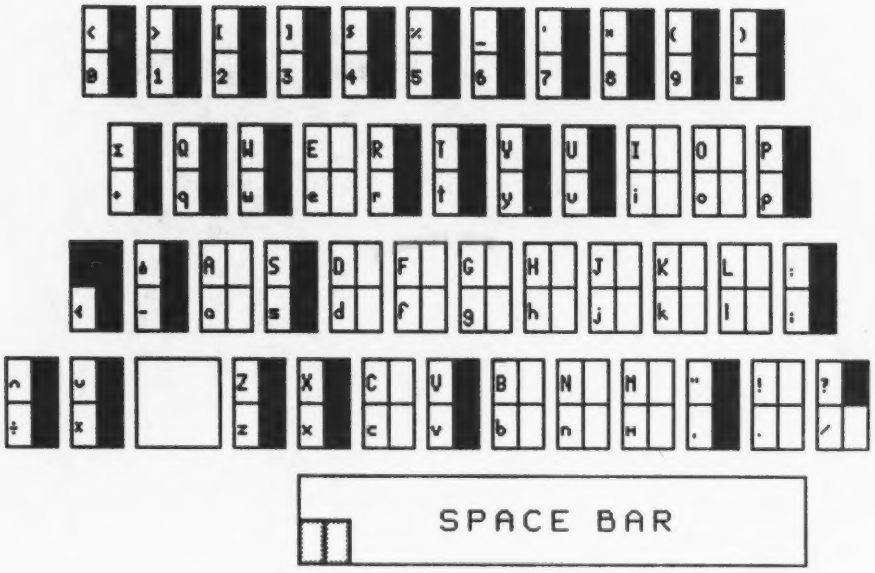


charsets, 3×5 chars2

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,3×5 chars2 28 Sep 84



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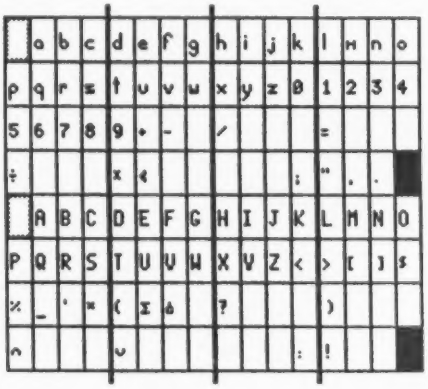
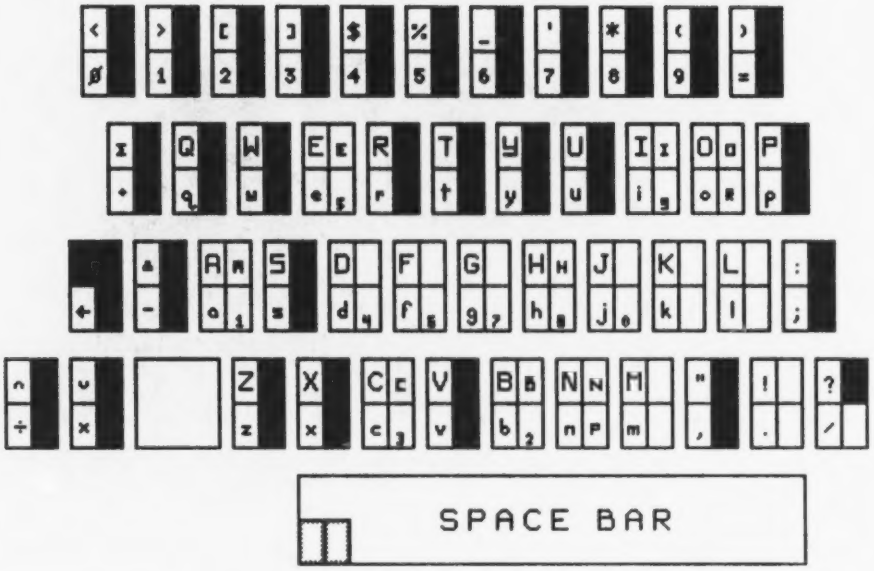


charsets, 4×7 chars2

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z Ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ≤ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
▫ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,4×7 chars2 17 Feb 83



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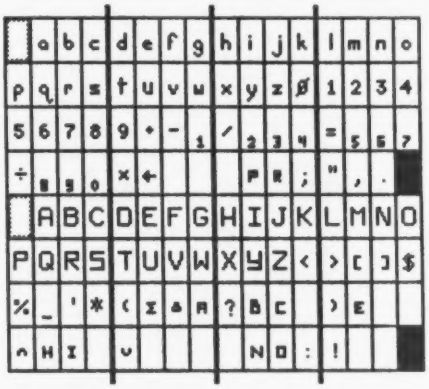
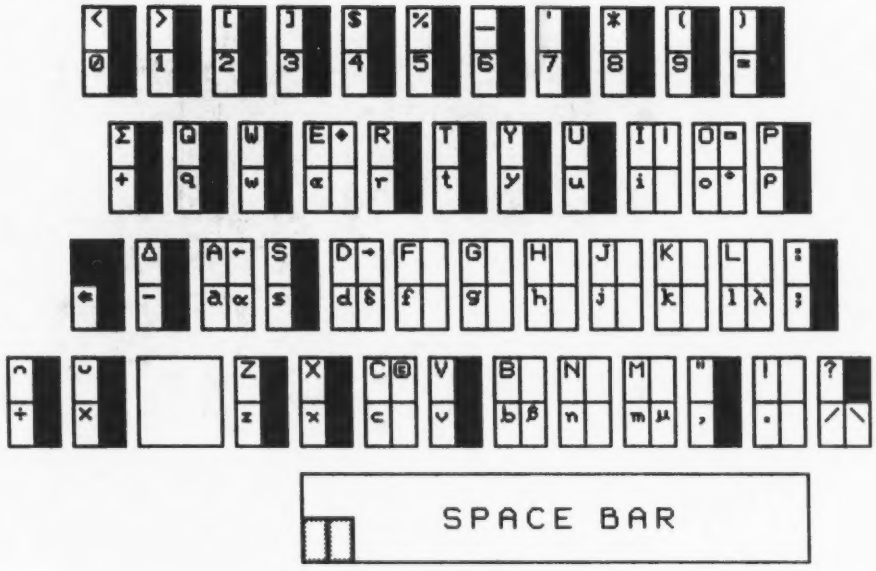


charsets, 4×7 chars1

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ H I (J) ↓ (/) (K) (L) (M) N O : ! (!) (.) --
charsets,4×7 chars1 24 Oct 79



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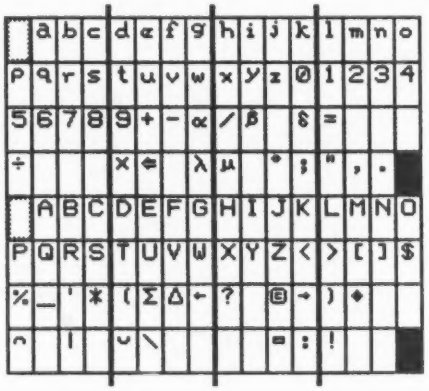
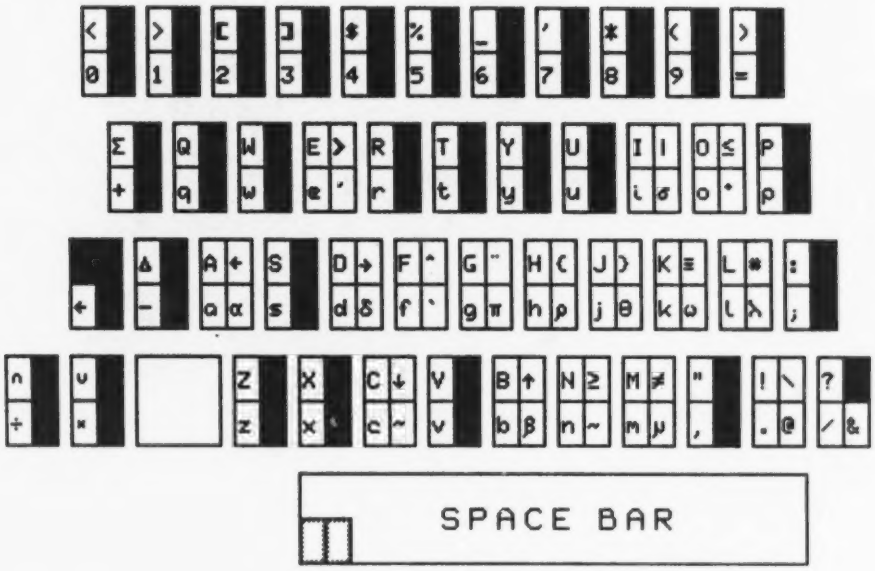


charsets,crunch

Michael Andra
11 Dec 85
charsets,crunch



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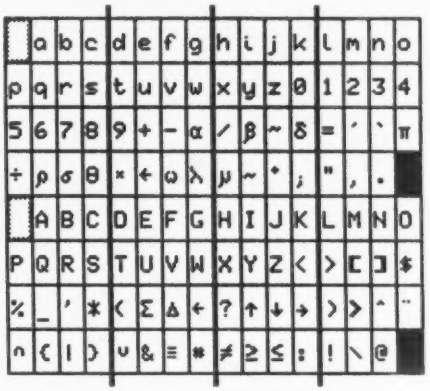
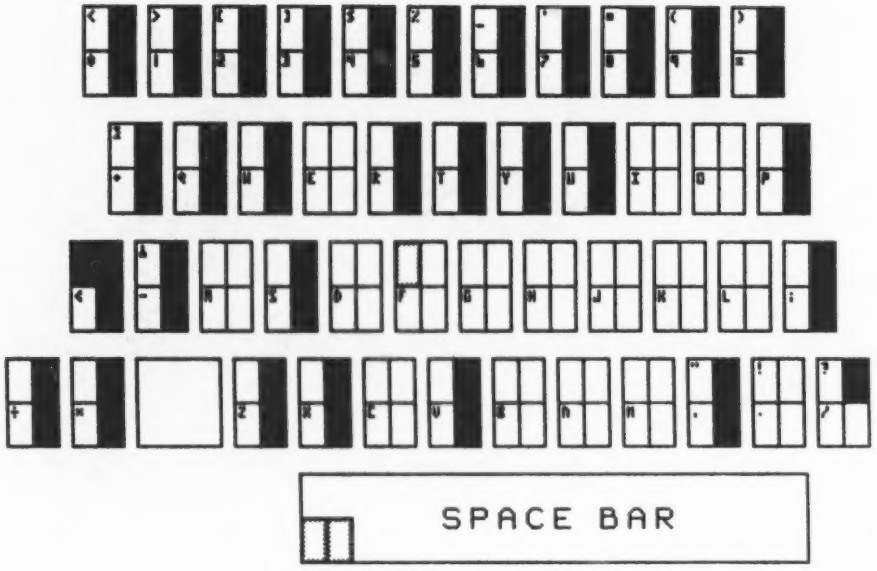
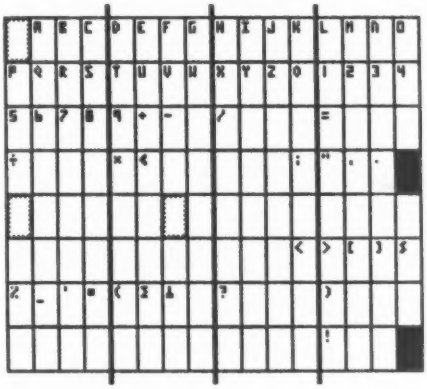


charsets, 5×7 chars

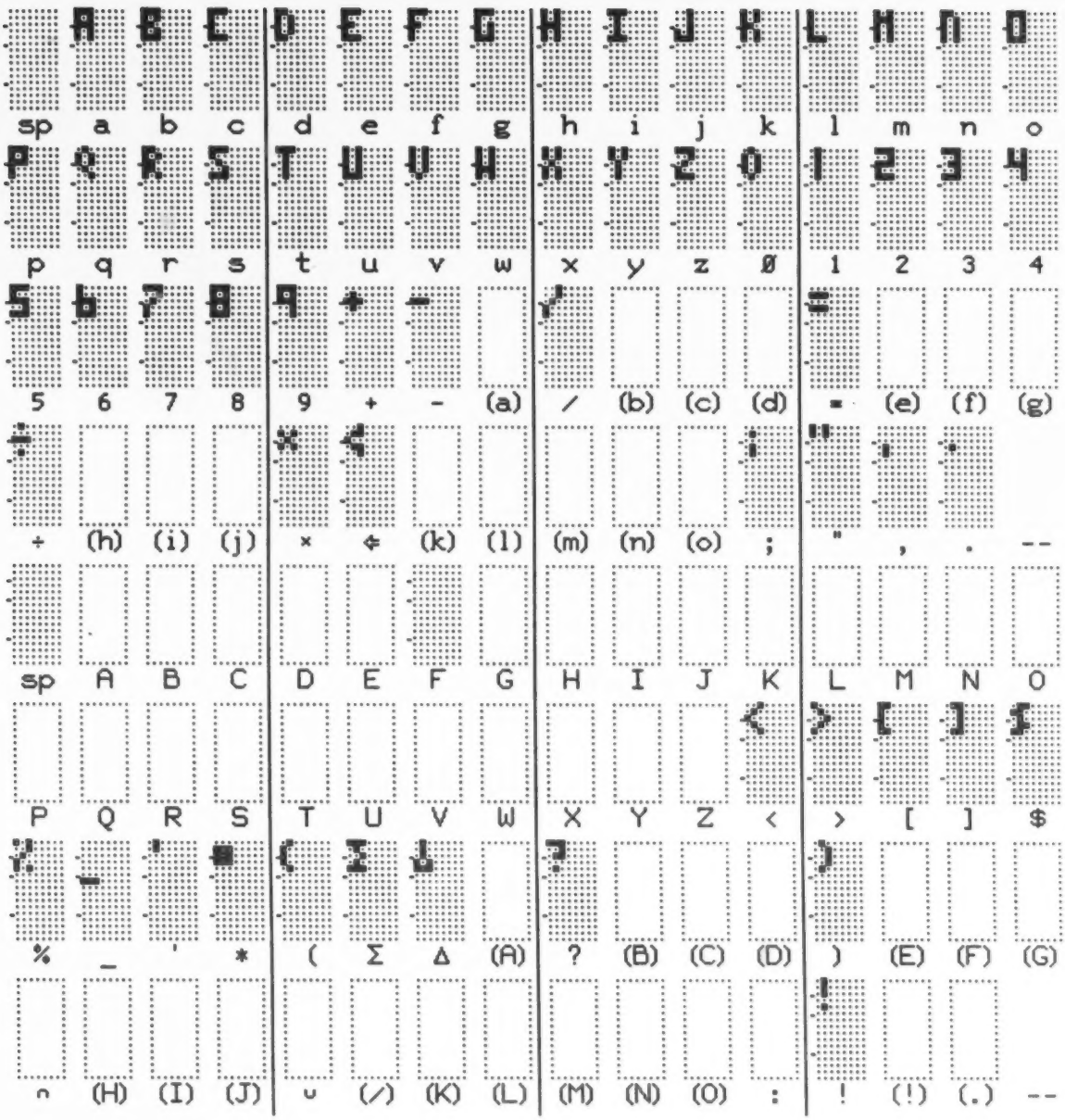
charsets,5×7 chars
24 Oct 79

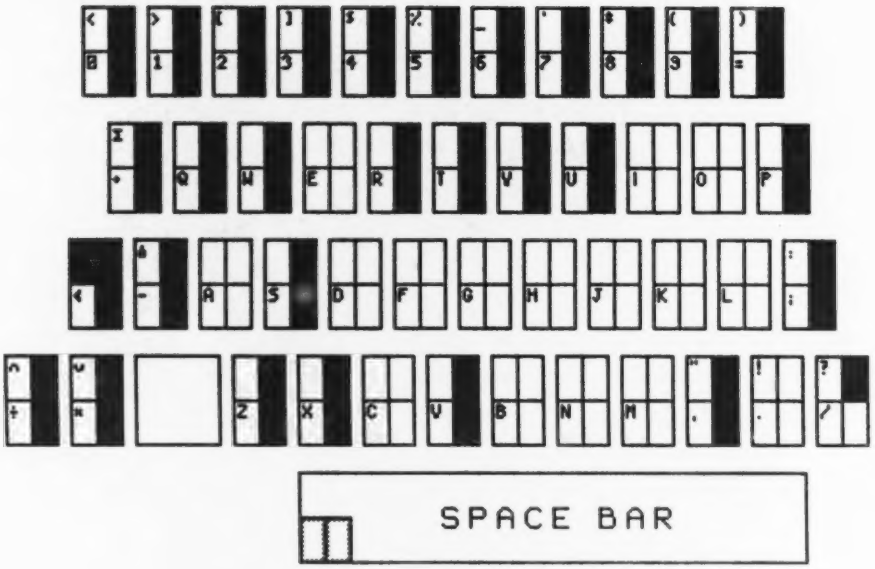


E THE EOPLE OF THE NITED TATES. IN RDER TO FORM A MORE PERFECT NION, ESTABLISH USTICE, INSURE DOMESTIC RANQUILITY. PROVIDE FOR THE COMMON DEFENCE, PROMOTE THE GENERAL ELFARE, AND SECURE THE BLESSINGS OF IBERTY TO OURSELVES AND OUR OSTERITY. DO ORDAIN AND ESTABLISH THIS ONSTITUTION FOR THE NITED TATES OF MERICA.

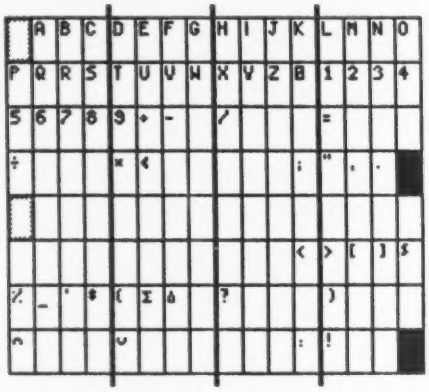


charsets, 3×5 chars

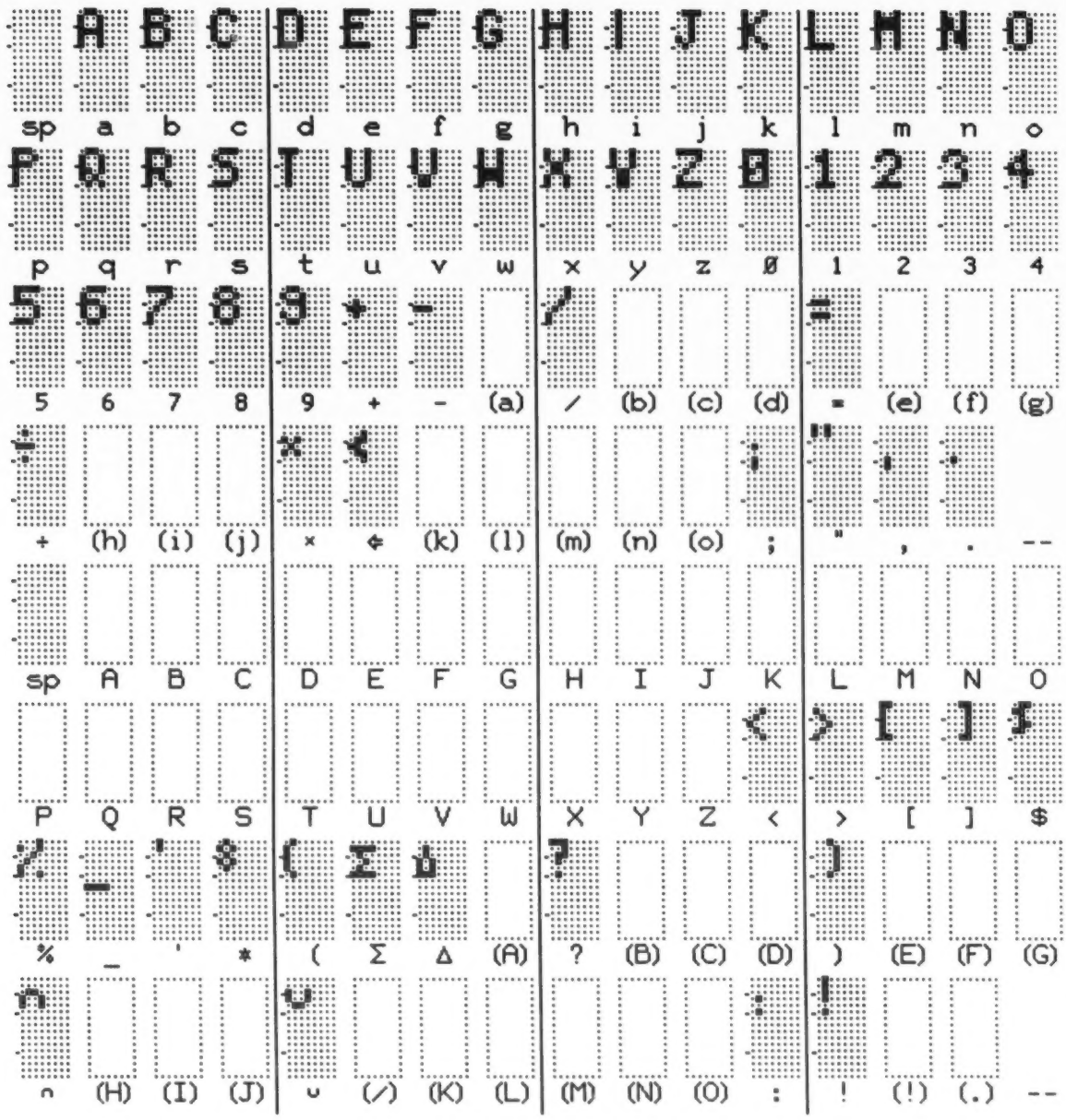

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,3×5 chars 17 Feb 83

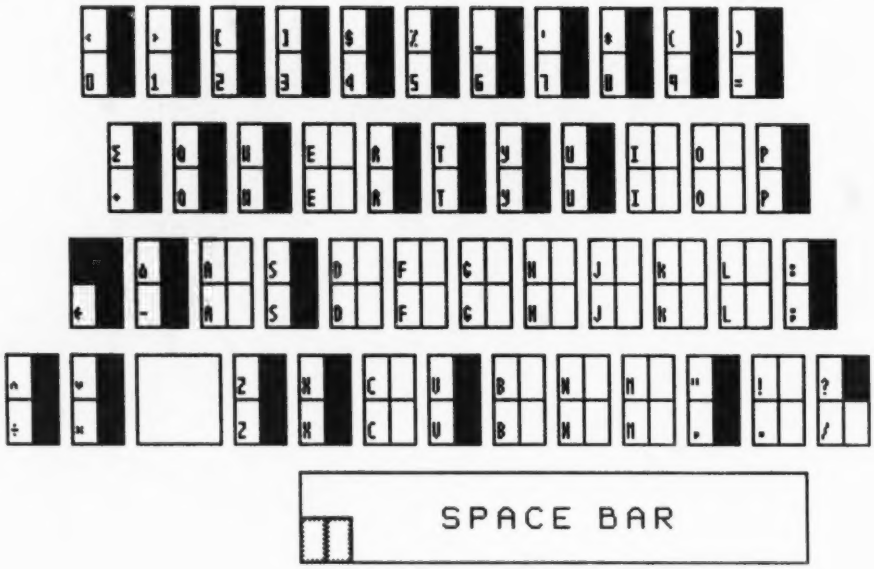


E THE EOPLE OF THE NITED TATES, IN RDER TO FORM A MORE PERFECT NION, ESTABLISH USTICE, INSURE DOMESTIC RANQUILITY, PROVIDE FOR THE COMMON DEFENCE, PROMOTE THE GENERAL ELFARE, AND SECURE THE BLESSINGS OF IBERTY TO OURSELVES AND OUR OSTERITY, DO ORDAIN AND ESTABLISH THIS ONSTITUTION FOR THE NITED TATES OF MERICA.

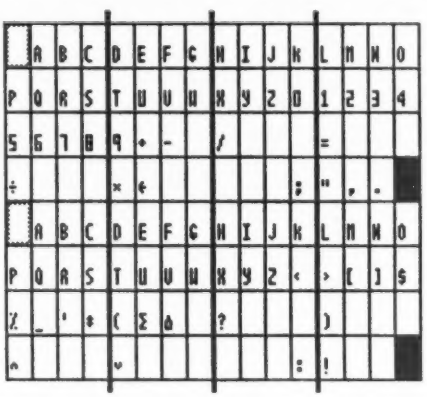


charsets, 4×6 chars


sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,4×6 chars 4 Sep 81

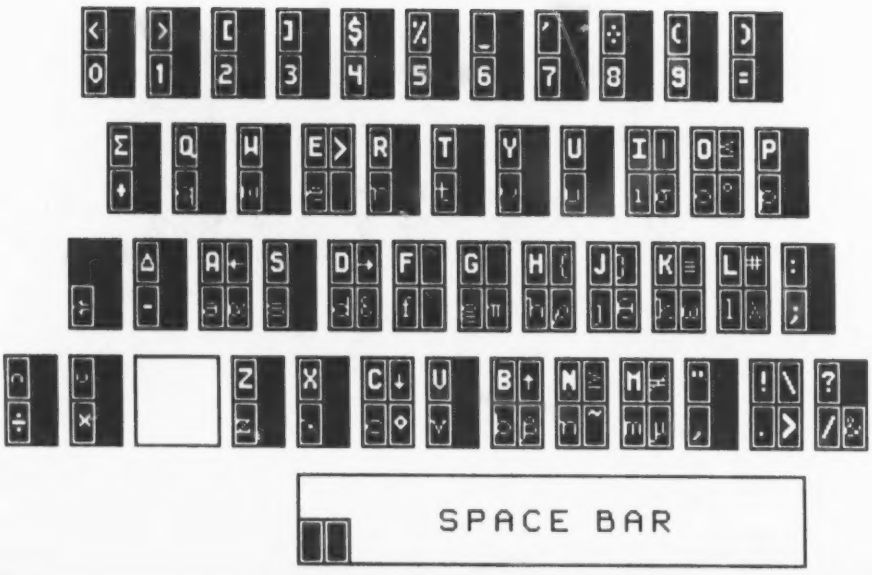


WE THE PEOPLE OF THE UNITED STATES, IN ORDER TO FORM A MORE PERFECT UNION, ESTABLISH JUSTICE, INSURE DOMESTIC TRANQUILITY, PROVIDE FOR THE COMMON DEFENCE, PROMOTE THE GENERAL WELFARE, AND SECURE THE BLESSINGS OF LIBERTY TO OURSELVES AND OUR POSTERITY, DO ORDAIN AND ESTABLISH THIS CONSTITUTION FOR THE UNITED STATES OF AMERICA.

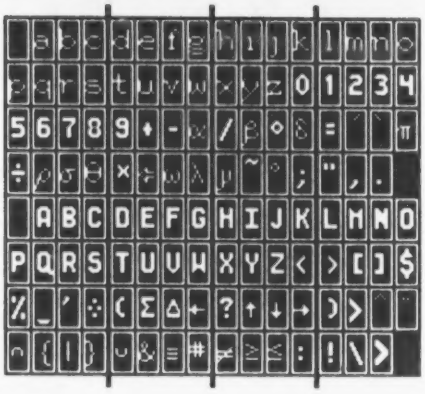


alphabets, 3×7 chars

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ≠ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
alphabets,3×7 chars 14 Jun 78

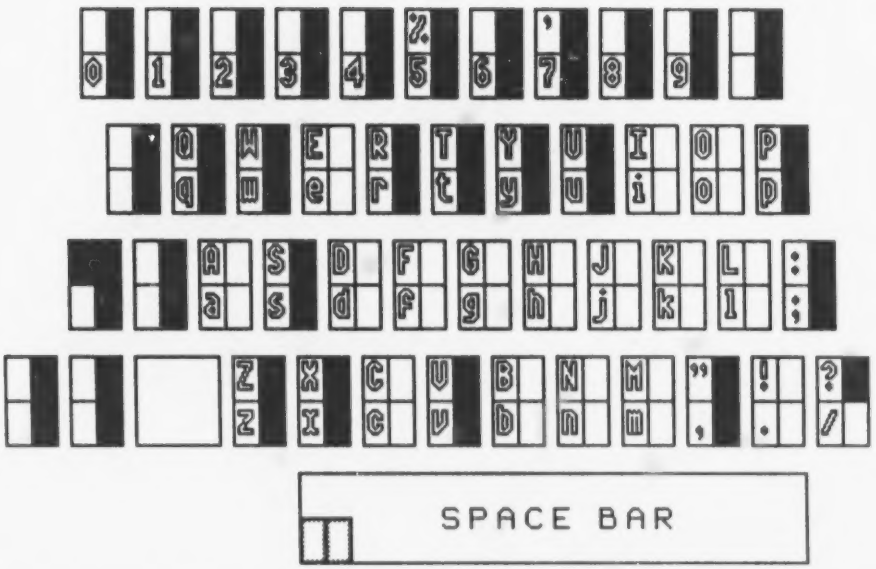


We the People of the United States, in Order to form a more perfect Union, establish Justice, insure domestic Tranquility, provide for the common defence, promote the general Welfare, and secure the blessings of Liberty to ourselves and our Posterity, do ordain and establish this Constitution for the United States of America.



charsets, orange

Richard W Blomme
25 Aug 82
charsets,orange



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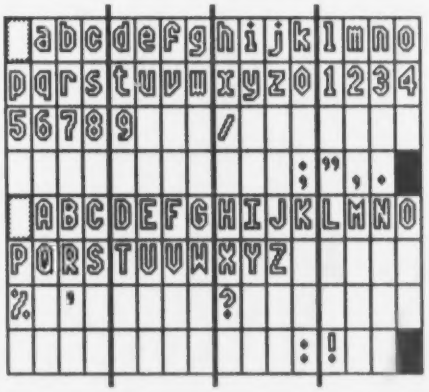
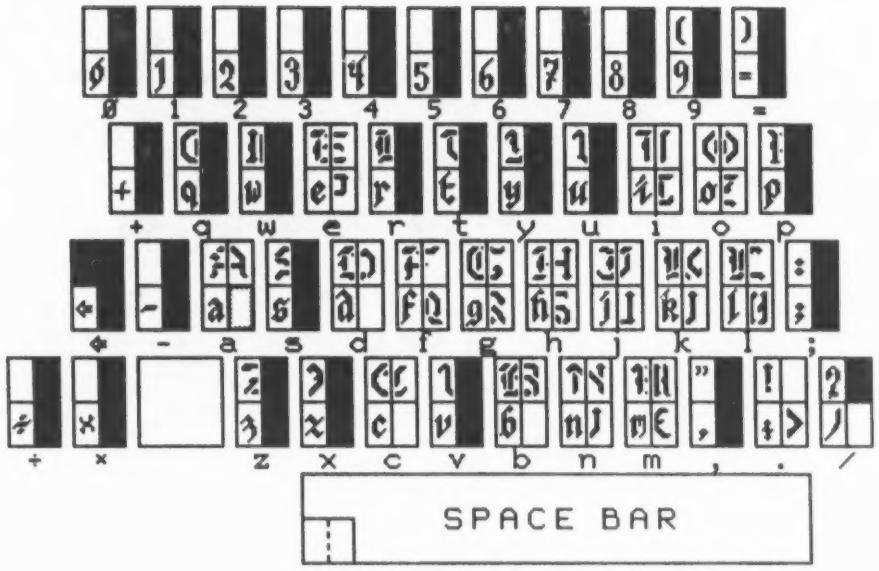


charsets,hollow

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ¢ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
John L Stratton
6 Dec 76
charsets,hollow



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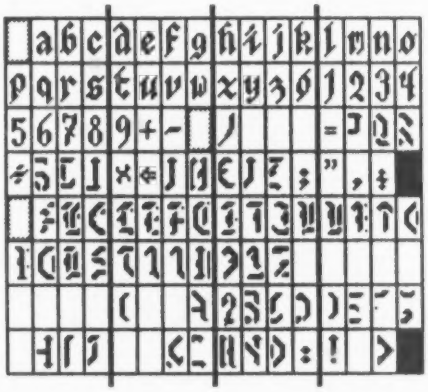
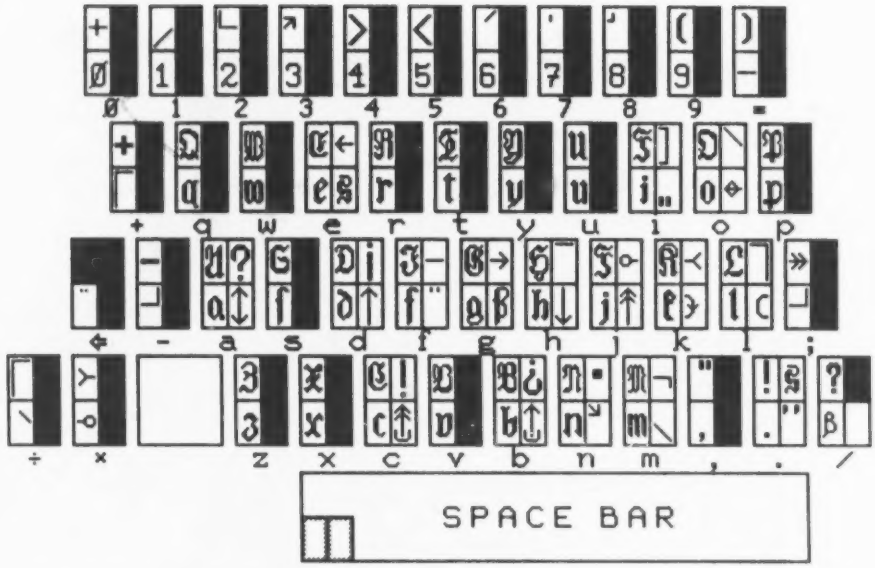


charsets,gothic

Douglas W Jones
15 Dec 81
charsets,gothic



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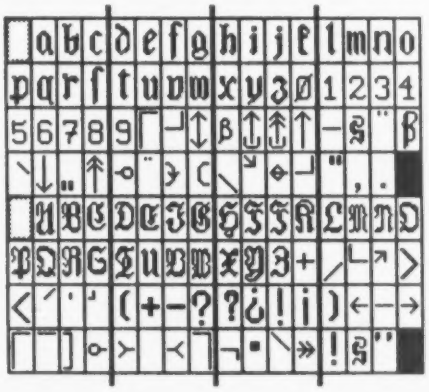
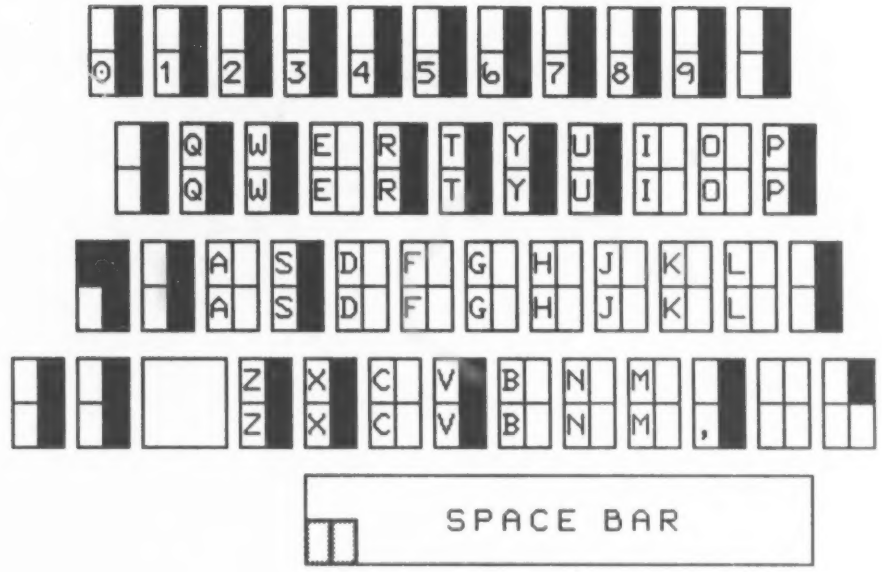
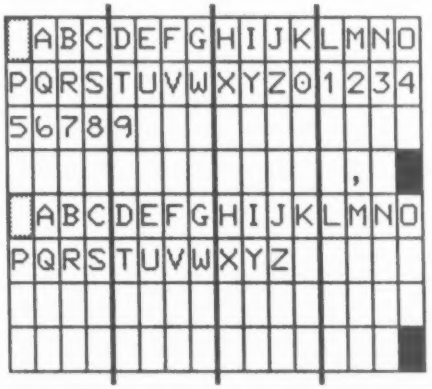


charmic,gerchar

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; ' , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charmic,gerchar 11 Feb 76

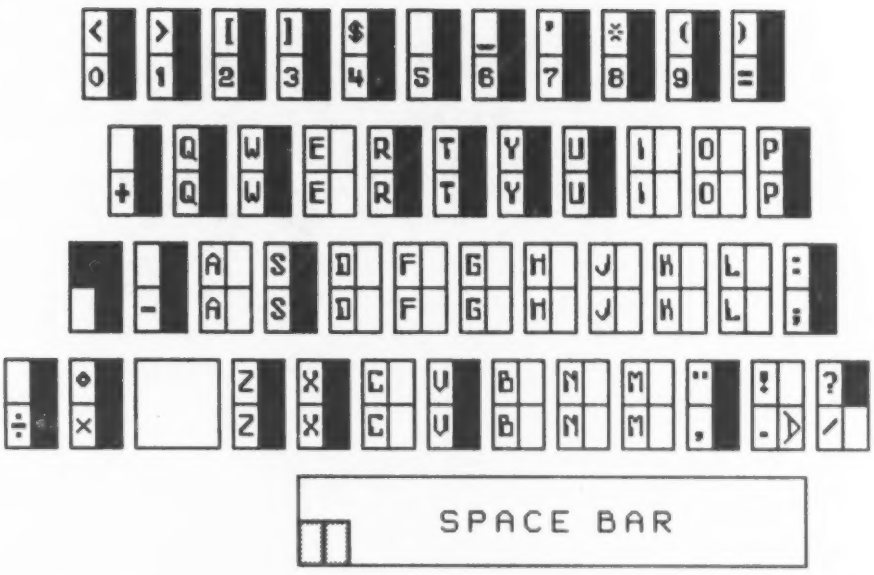


WE THE PEOPLE OF THE UNITED STATES, IN ORDER TO FORM A MORE PERFECT UNION, ESTABLISH JUSTICE, INSURE DOMESTIC TRANQUILITY, PROVIDE FOR THE COMMON DEFENCE, PROMOTE THE GENERAL WELFARE, AND SECURE THE BLESSINGS OF LIBERTY TO OURSELVES AND OUR POSTERITY, DO ORDAIN AND ESTABLISH THIS CONSTITUTION FOR THE UNITED STATES OF AMERICA



charsets,ibmchars

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ¢ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
charsets,ibmchars 4 Oct 78 Warren Auld & Paul Wasserman



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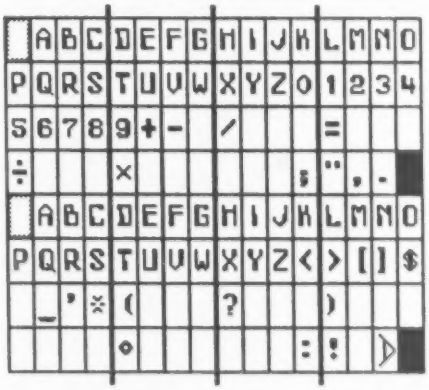
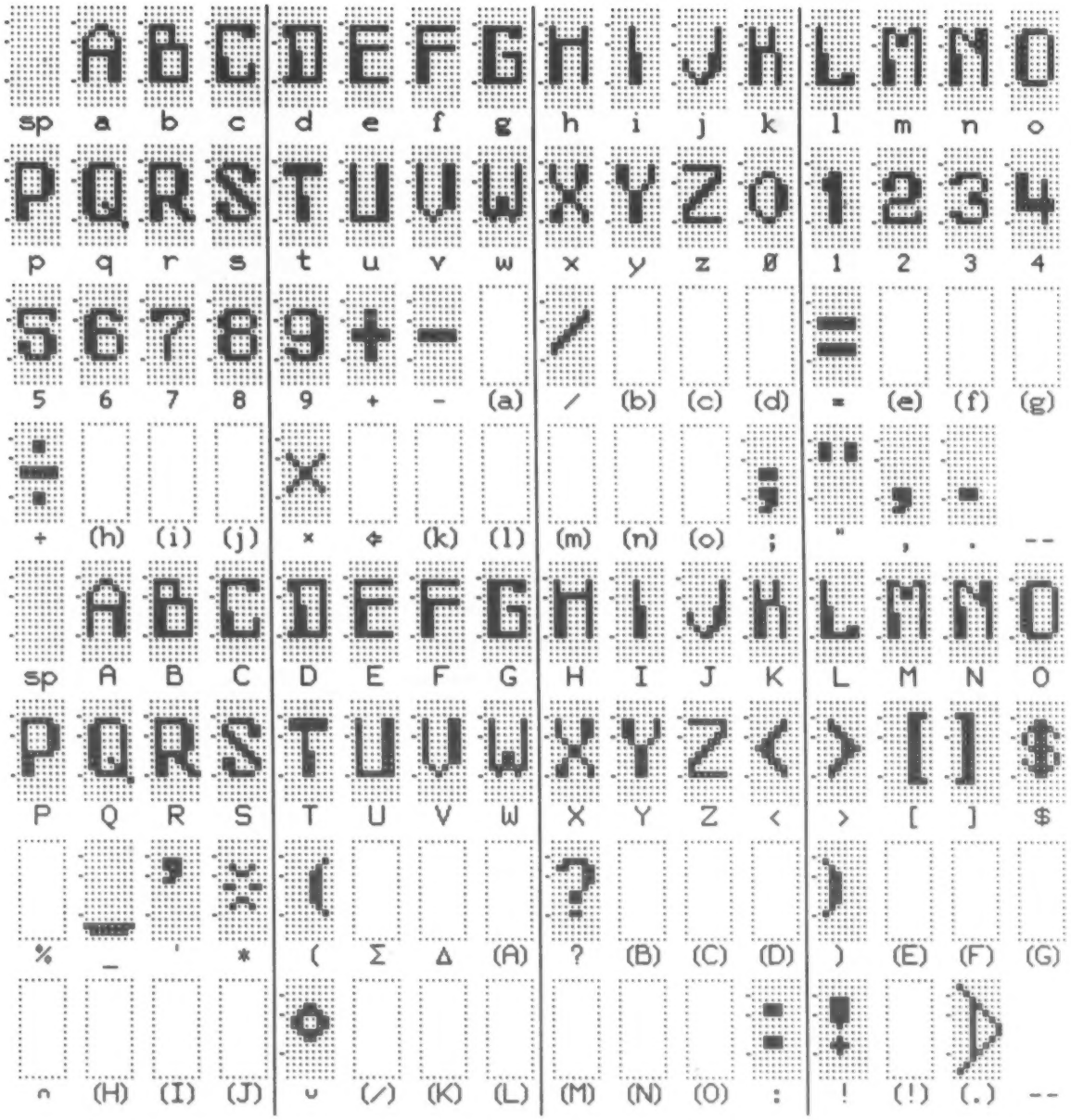
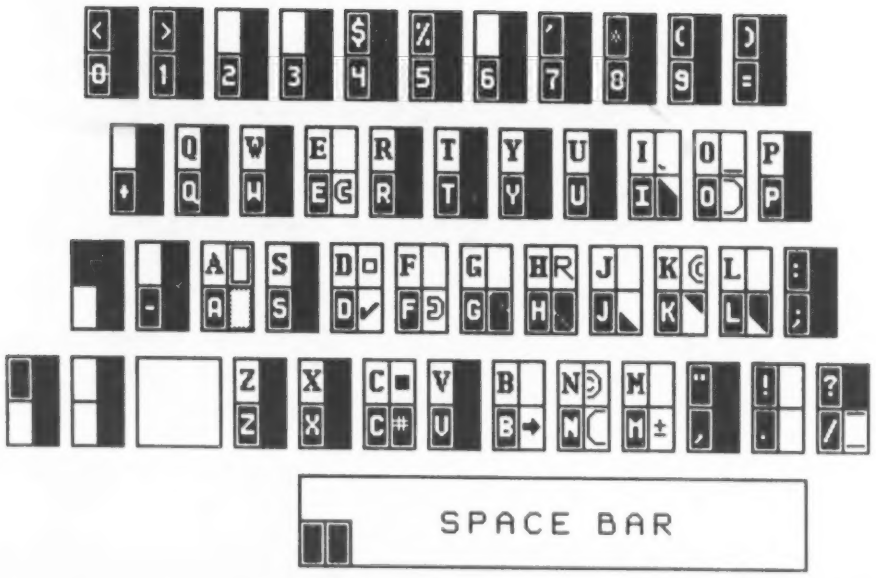


charsets,digital


sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; ' , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
George Friedman
23 Jun 76
charsets,digital



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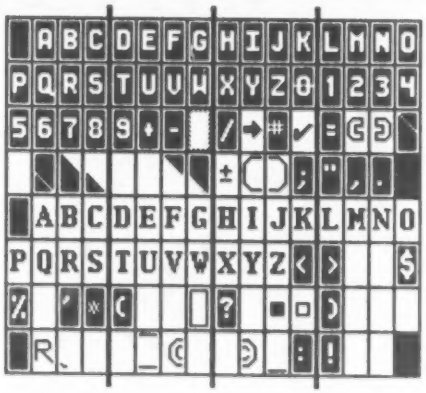
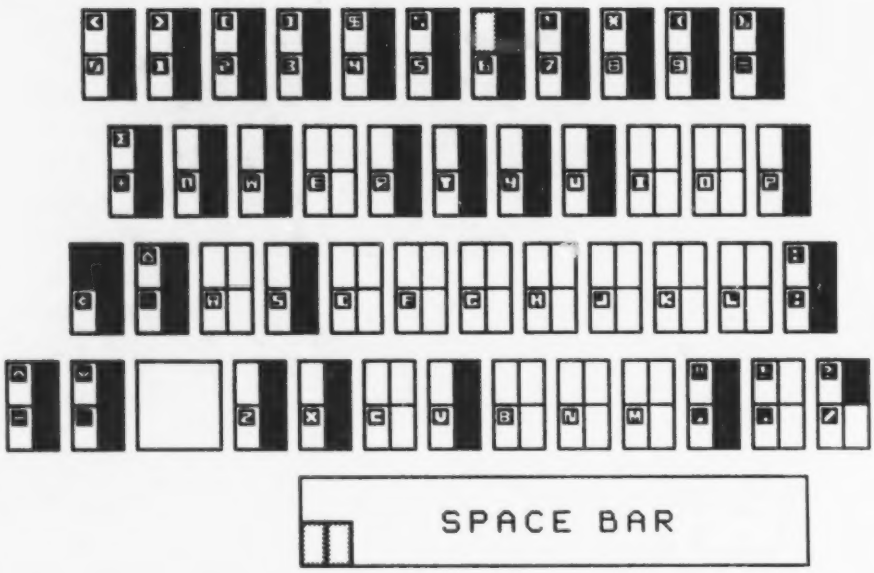
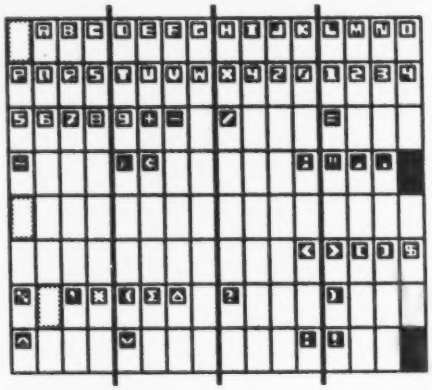


charsets.plm

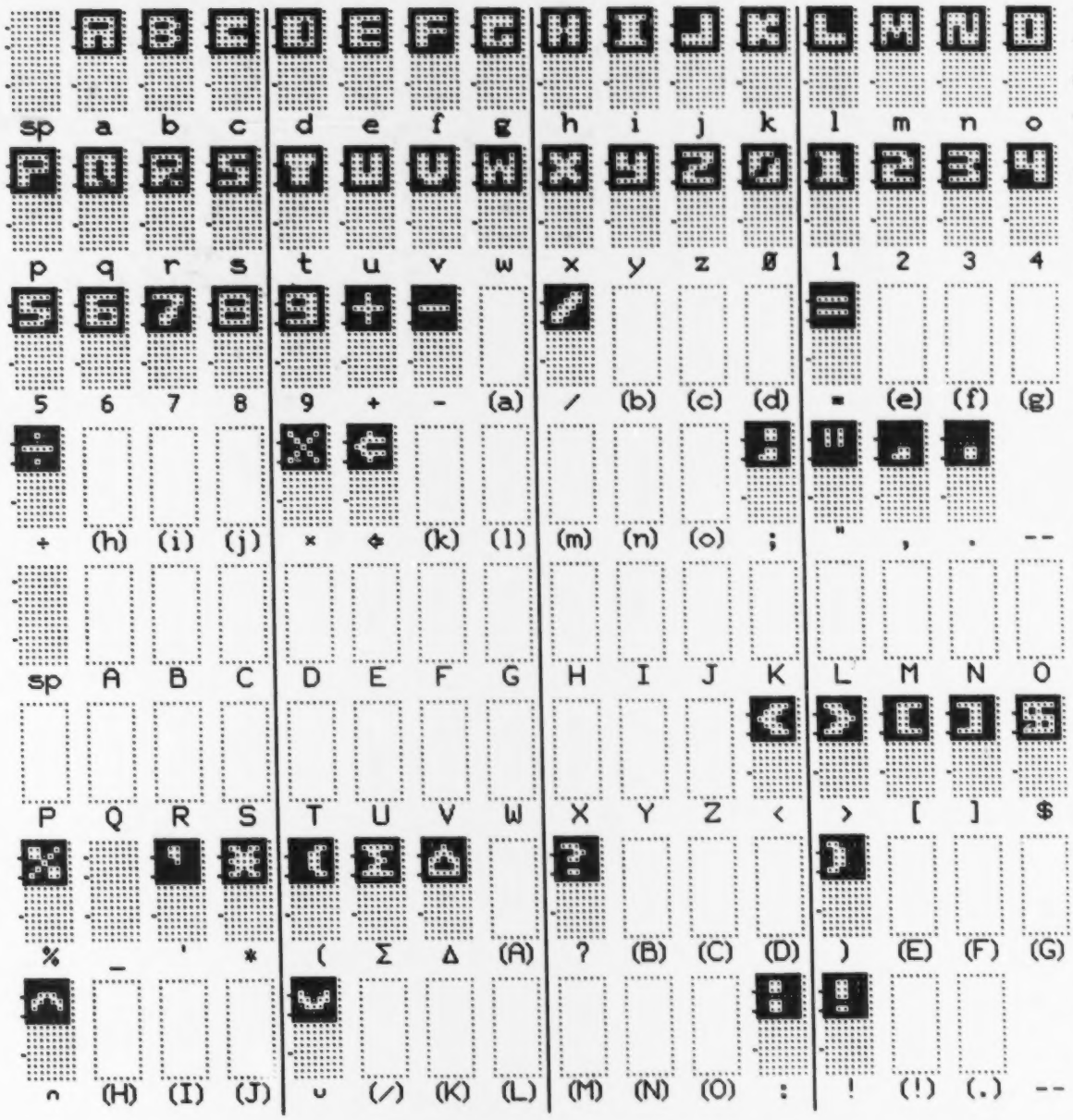
sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ≠ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
Control Data Corporation
26 Jul 78
charsets,plm

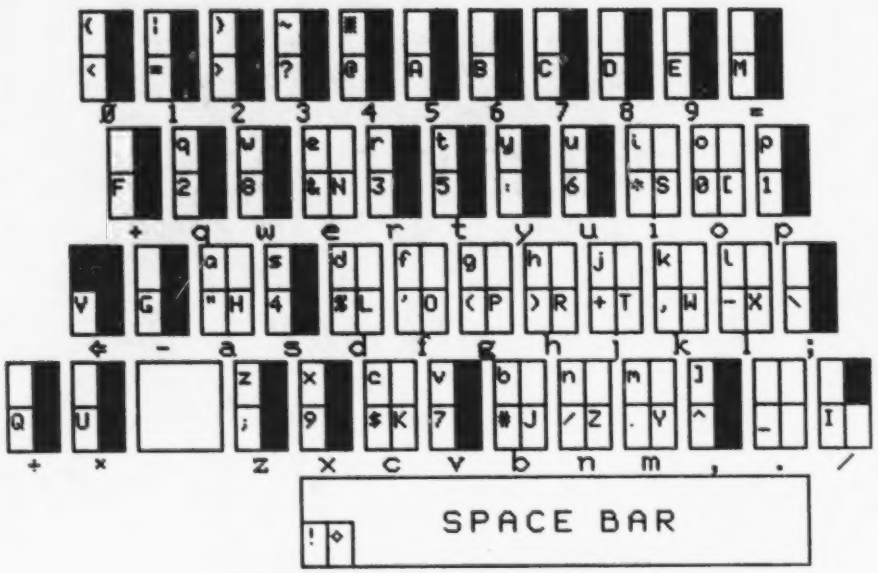


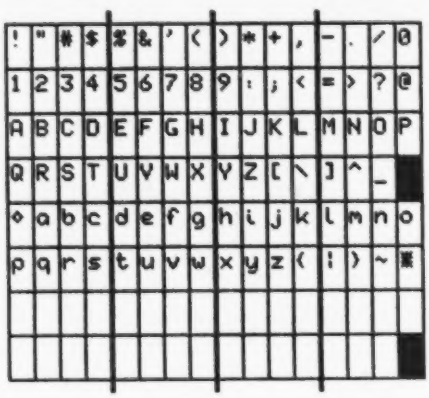
E THE EOPLE OF THE NITED TATES. IN OEP TO FORM A MORE PERFECT NION. ESTHBLISH USTICE. INSUPE OMESTIC PNQUTLITY. POVIDE FOP THE COMMON DEFENCE. POMOTE THE GENEPAL ELFAPE. AND SECUPE THE BLESSINGS OF IBEPTY TO OUPSELVES AND OUP OSTEPITY. DO OPDAIN AND ESTABLISH THIS ONSTITUTION FOP THE NITED TATES OF MEPICH.



charsets,blocdec

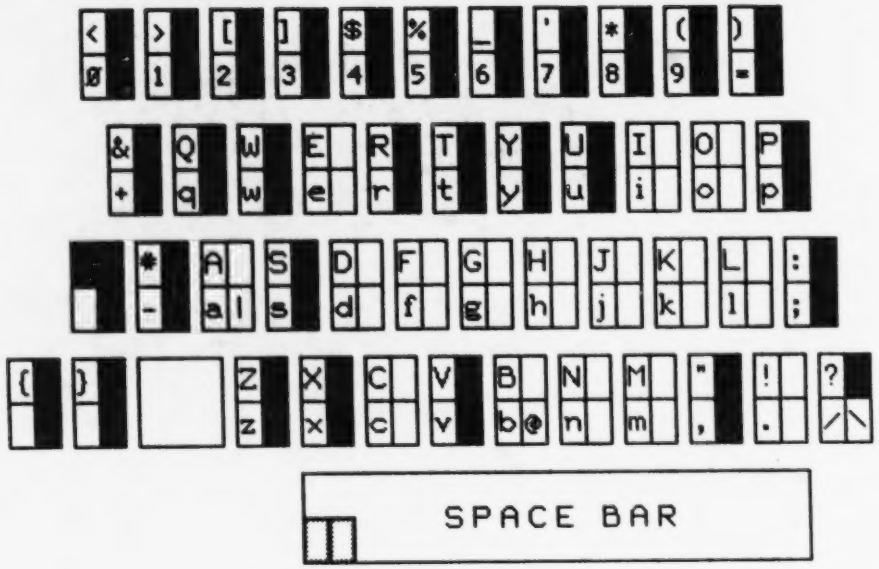

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ¢ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
Michael Andra
11 Dec 85
charsets,blocdec





alphabets,ansci ordr

alphabets,ansci ordr 17 May 78



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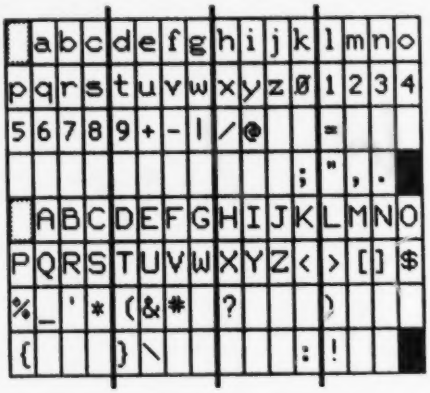
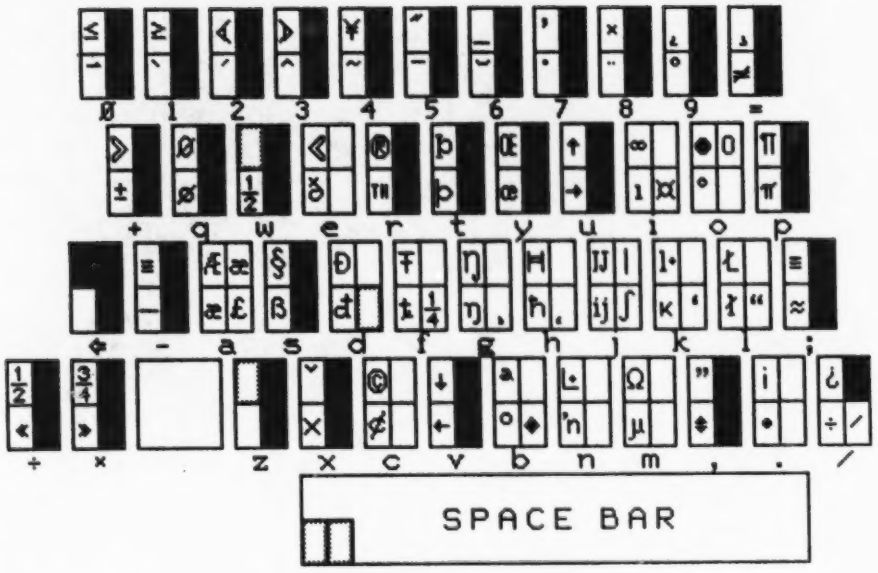
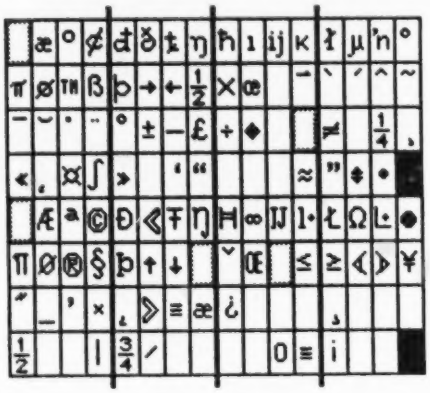


alphabets,ascii GL

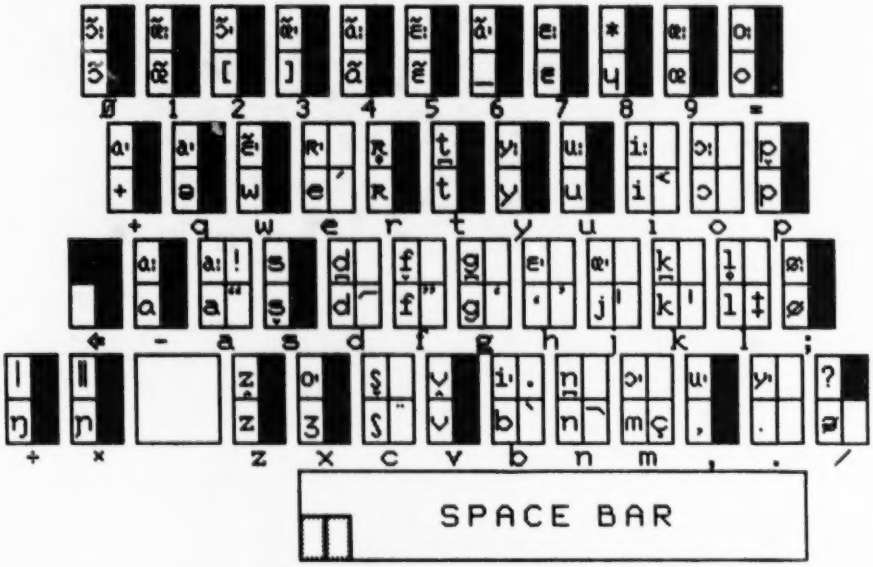
alphabets,ascii GL
12 Mar 83





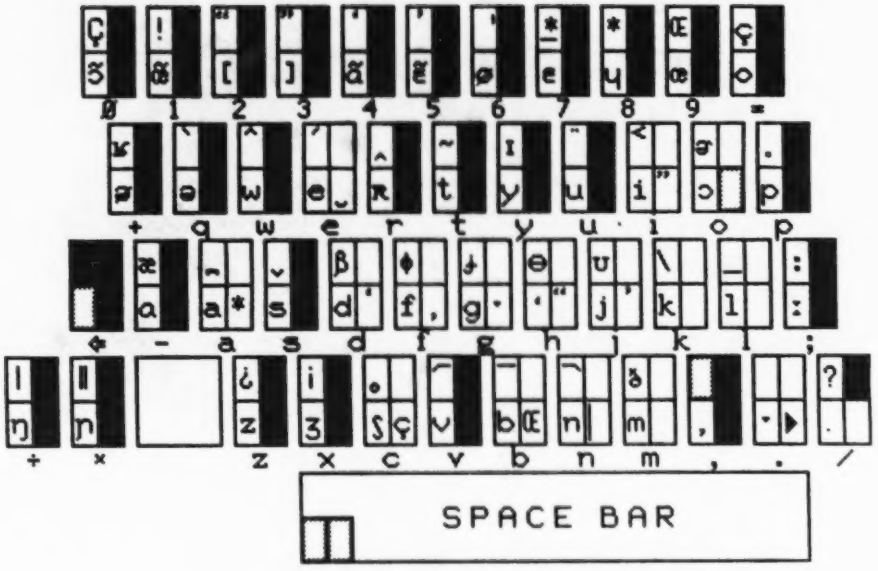
alphabets,ascii GR

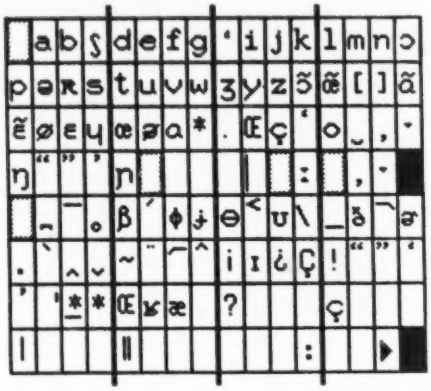
sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
ɔ (H) (I) (J) ᴗ (/) (K) (L) (M) (N) (O) : ¡ (!) (.) --
alphabets,ascii GR 15 Jun 83



charmic, nuphon

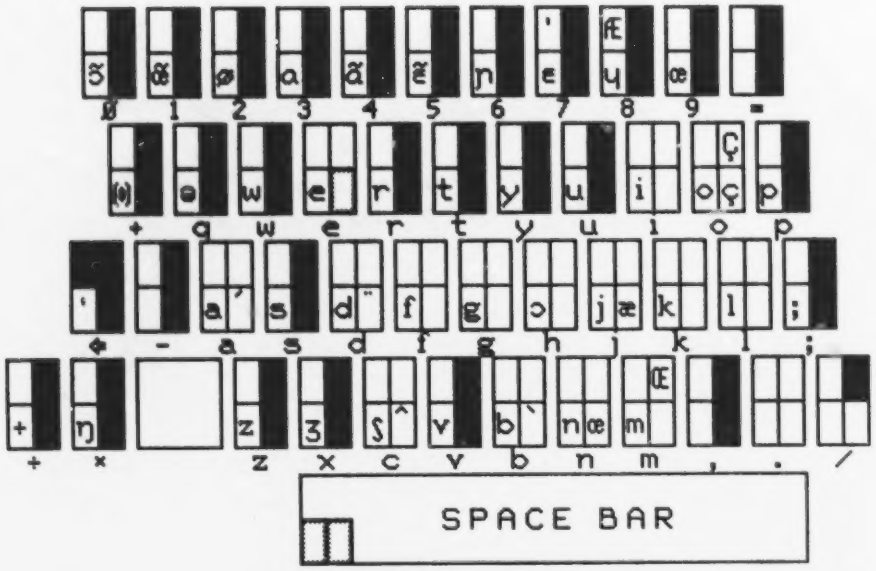
sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
ɲ (H) (I) (J) ᵕ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
19 Jul 74
charmic, nuphon

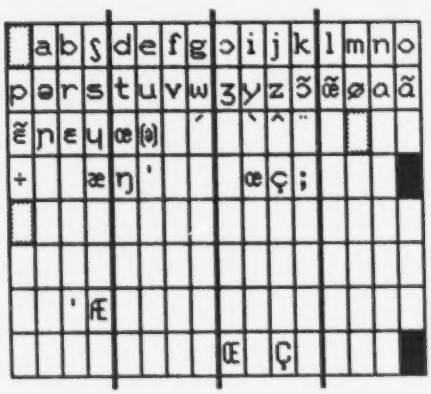




charsets,phon

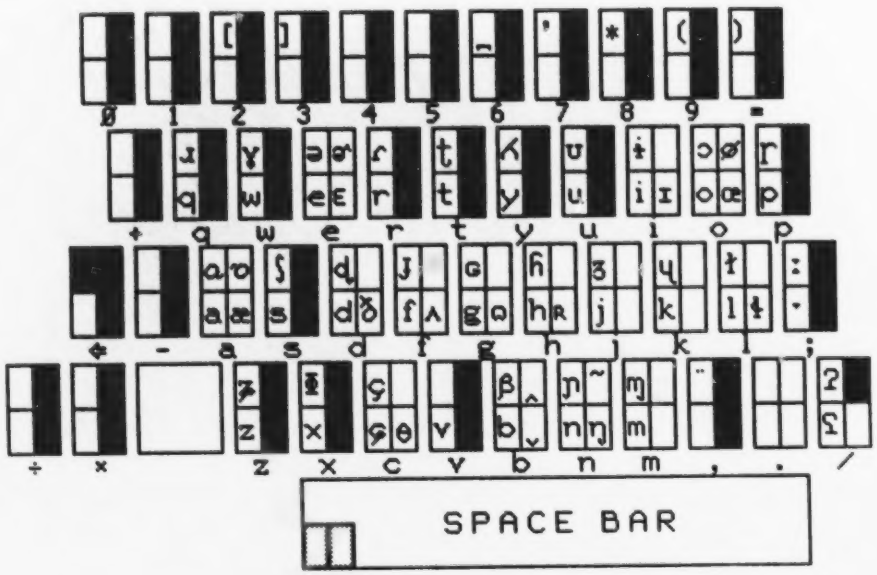
MFL authors
charsets,phon





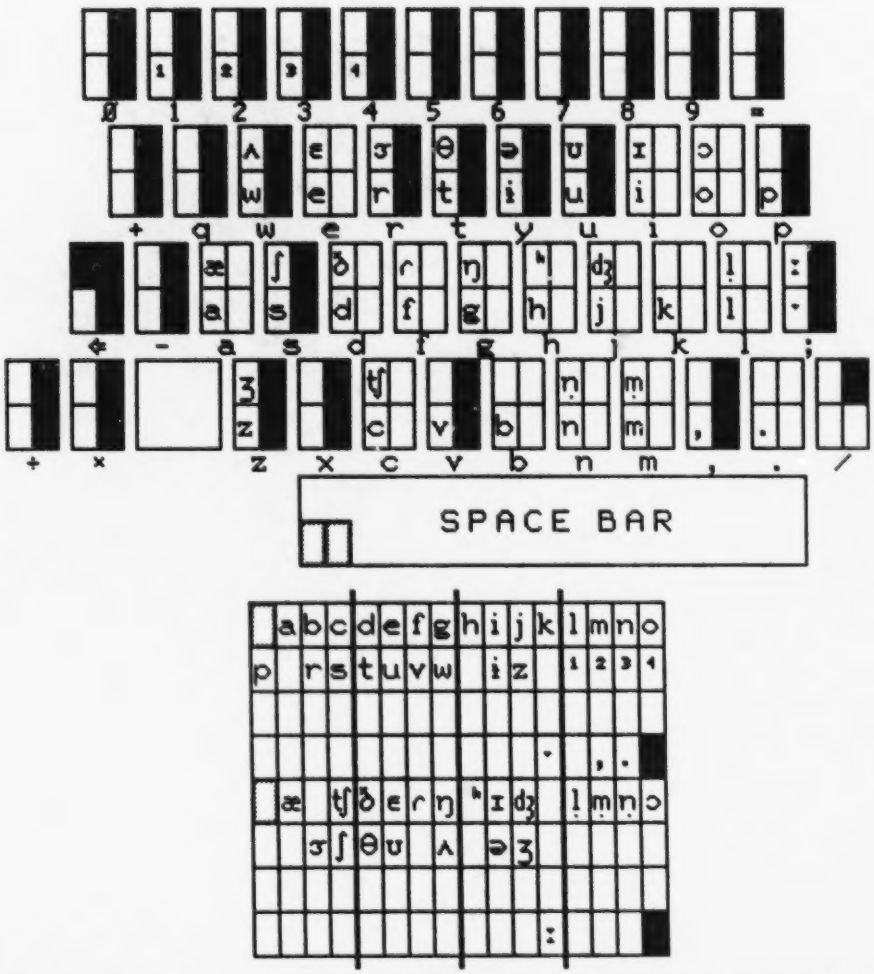
charfr,marty

Fernand Marty
charfr,marty



charsets, ipa

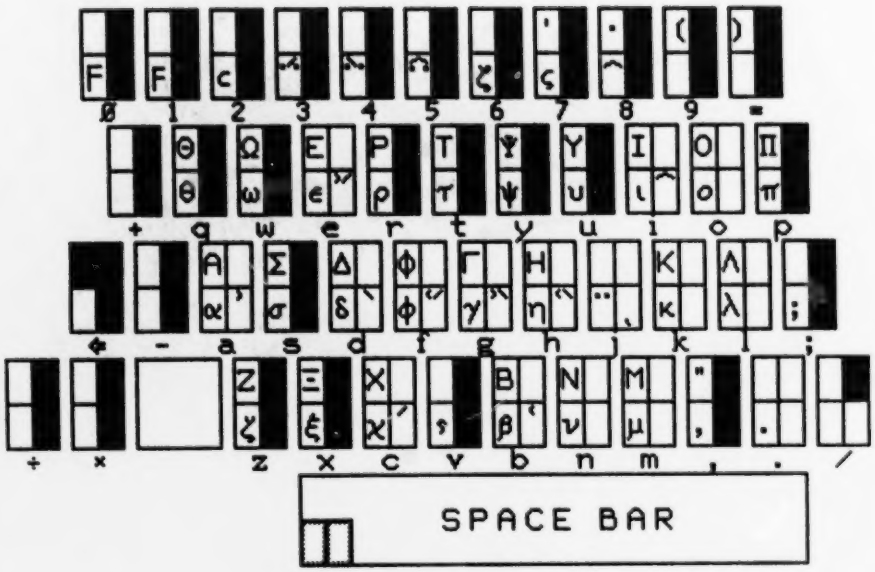
sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
Celia Kraatz
8 Jul 77
charsets,ipa

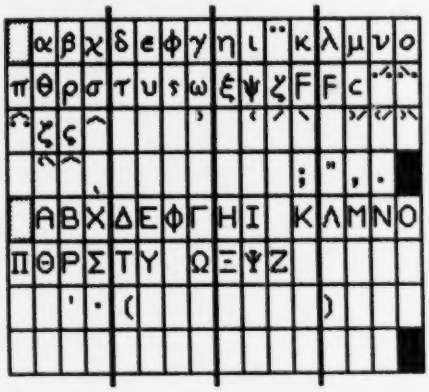


charsets,sayipa

"sayipa" includes those IPA characters whose sounds can be reproduced by the Votrax digital speech synthesizer used with the -saylang- command. For more information on "sayipa", enter "IT" in the system editor and read the HELP pages there.

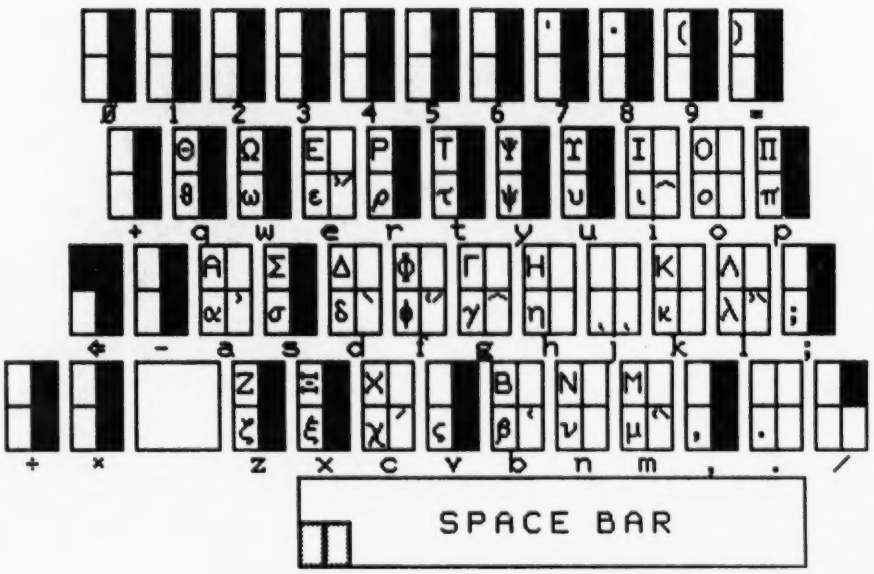
Hugo Feugen
12 Mar 78
charsets,sayipa





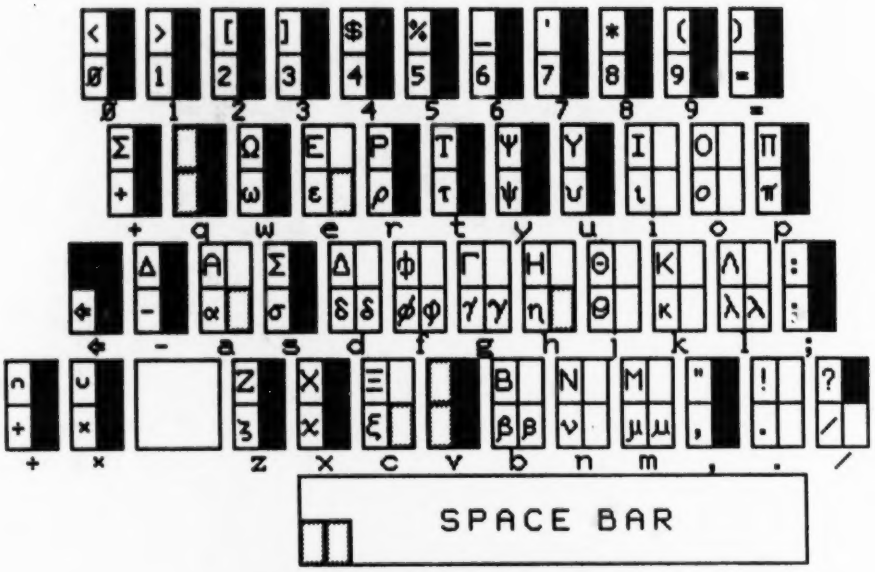
charsets, greek

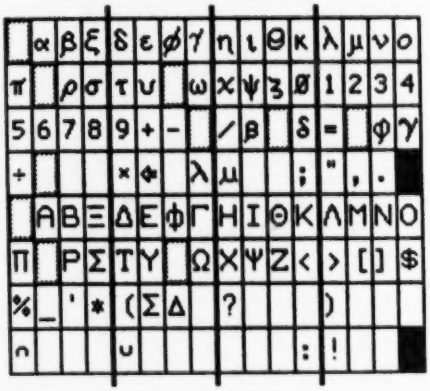
sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) - (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
David Slayton
8 Dec 82
charsets,greek



111chars, greek

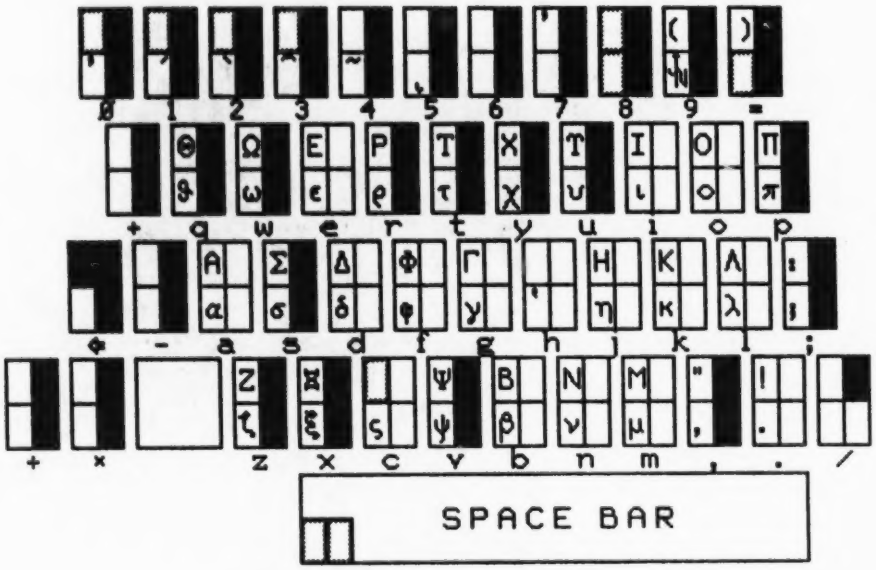
sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; (L) (M) (N)
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
ɔ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
5 Jun 78
111chars,greek





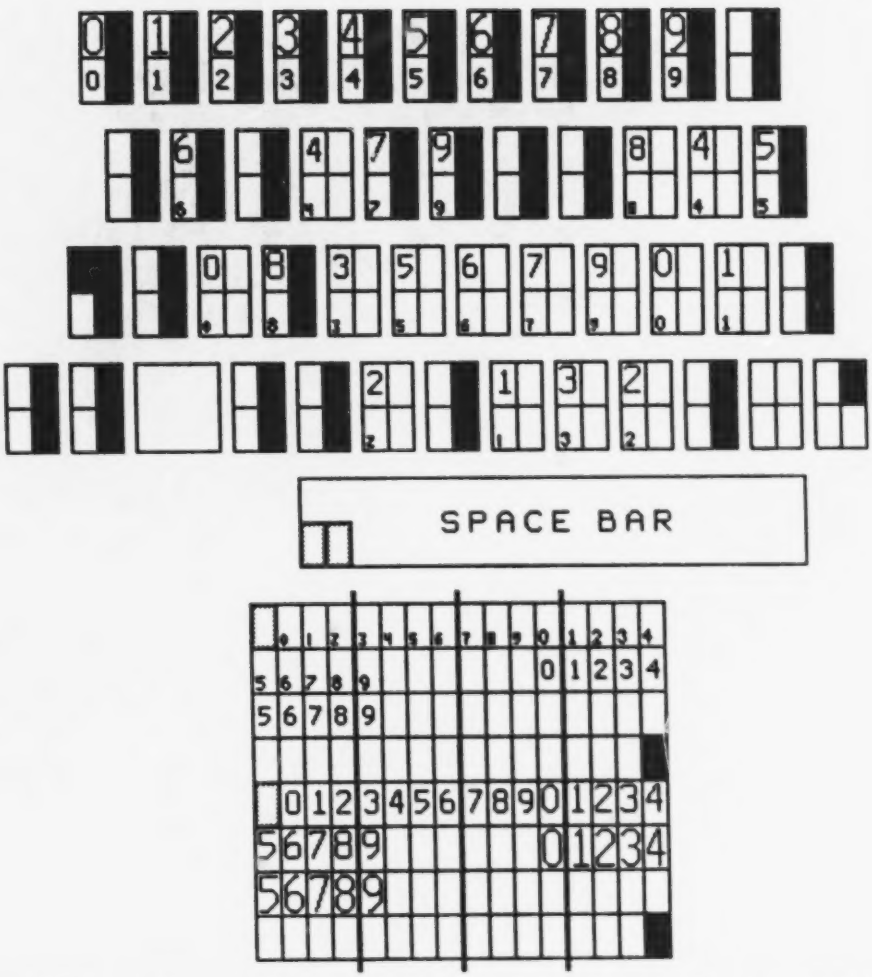
alphabets, greek

sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) = (e) (f) (g)
÷ (h) (i) (j) × ⇐ (k) (l) (m) (n) (o) ; " , . !
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) !!
26 Sep 75
alphabets,greek



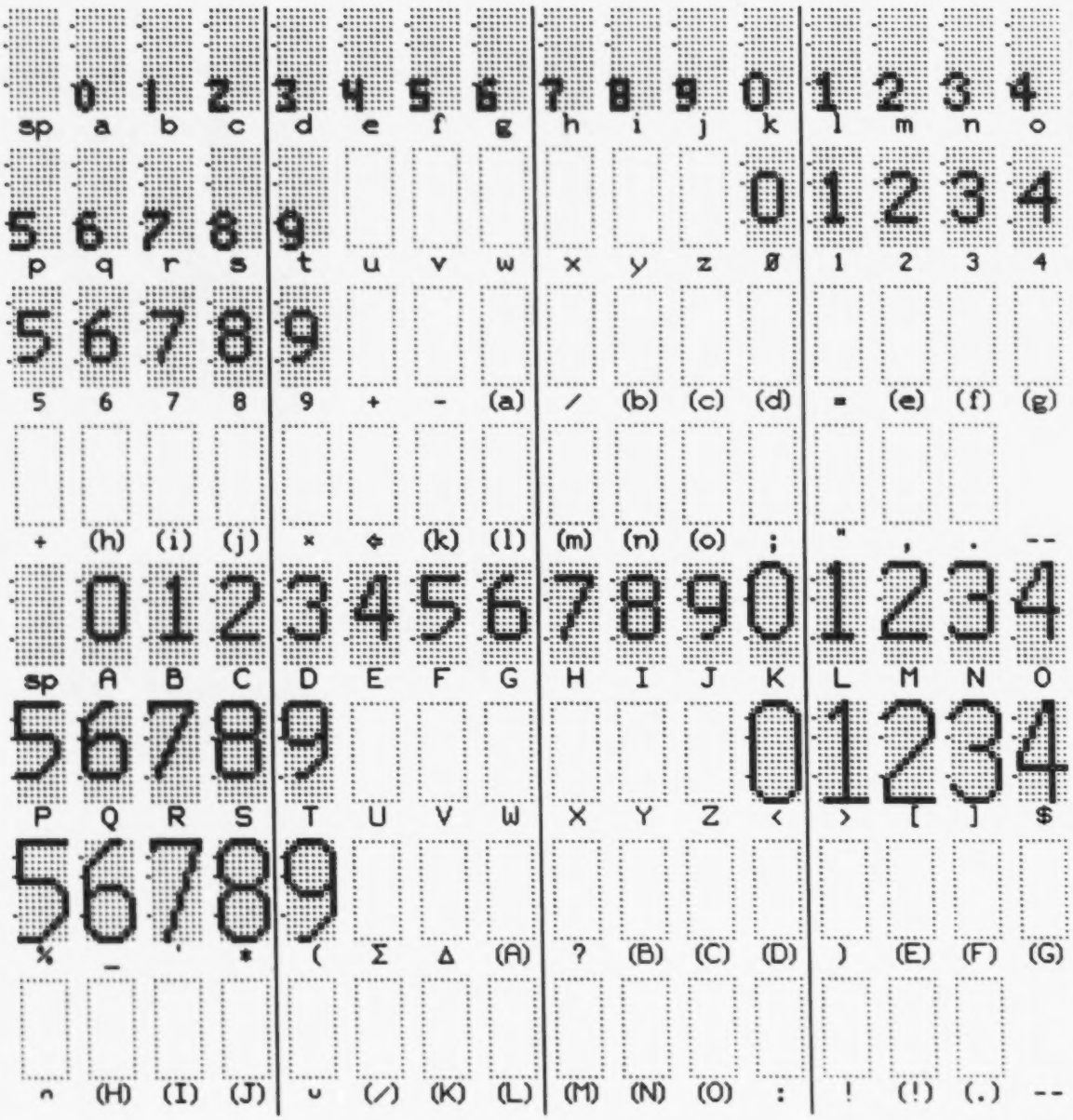
alphabets,neffgreek

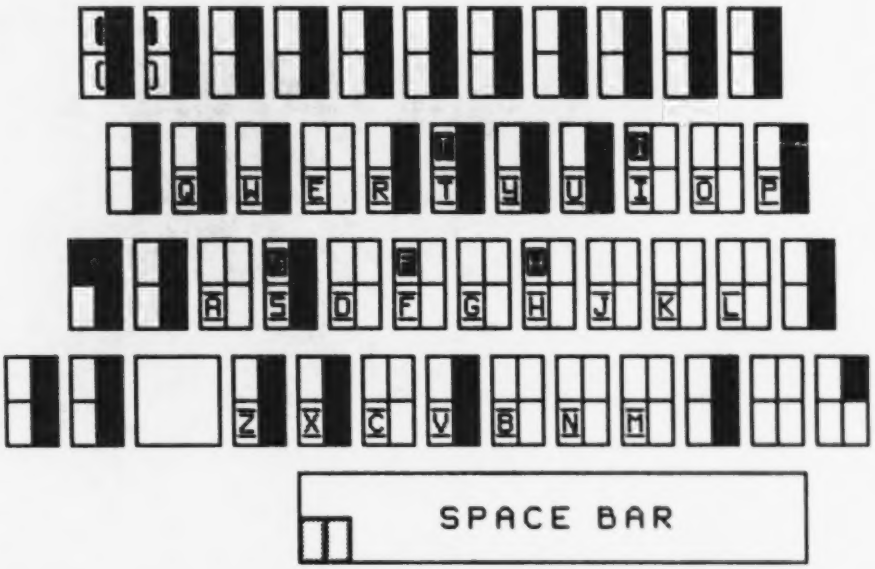
sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ø 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; " , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
¬ (H) (I) (J) ∪ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
alphabets,meffgreek 13 Jul 76



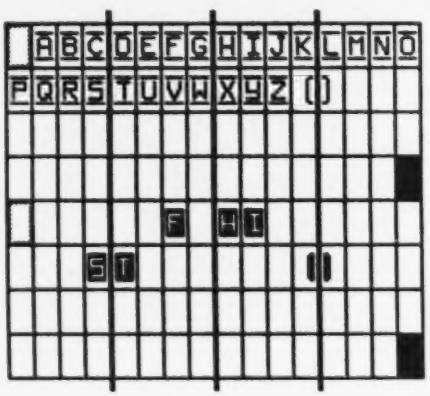
charsets, numerals

"numerals" gathers in one place (a) numerals as small as can be made, (b) standard numerals, (c) numerals as large as can be made (on one char), and (d) numerals of three intermediate sizes. All are in the style of the fixed system character set, within limits of the given resolutions and aspect ratios. (The biggest departure is the smallest "4".)

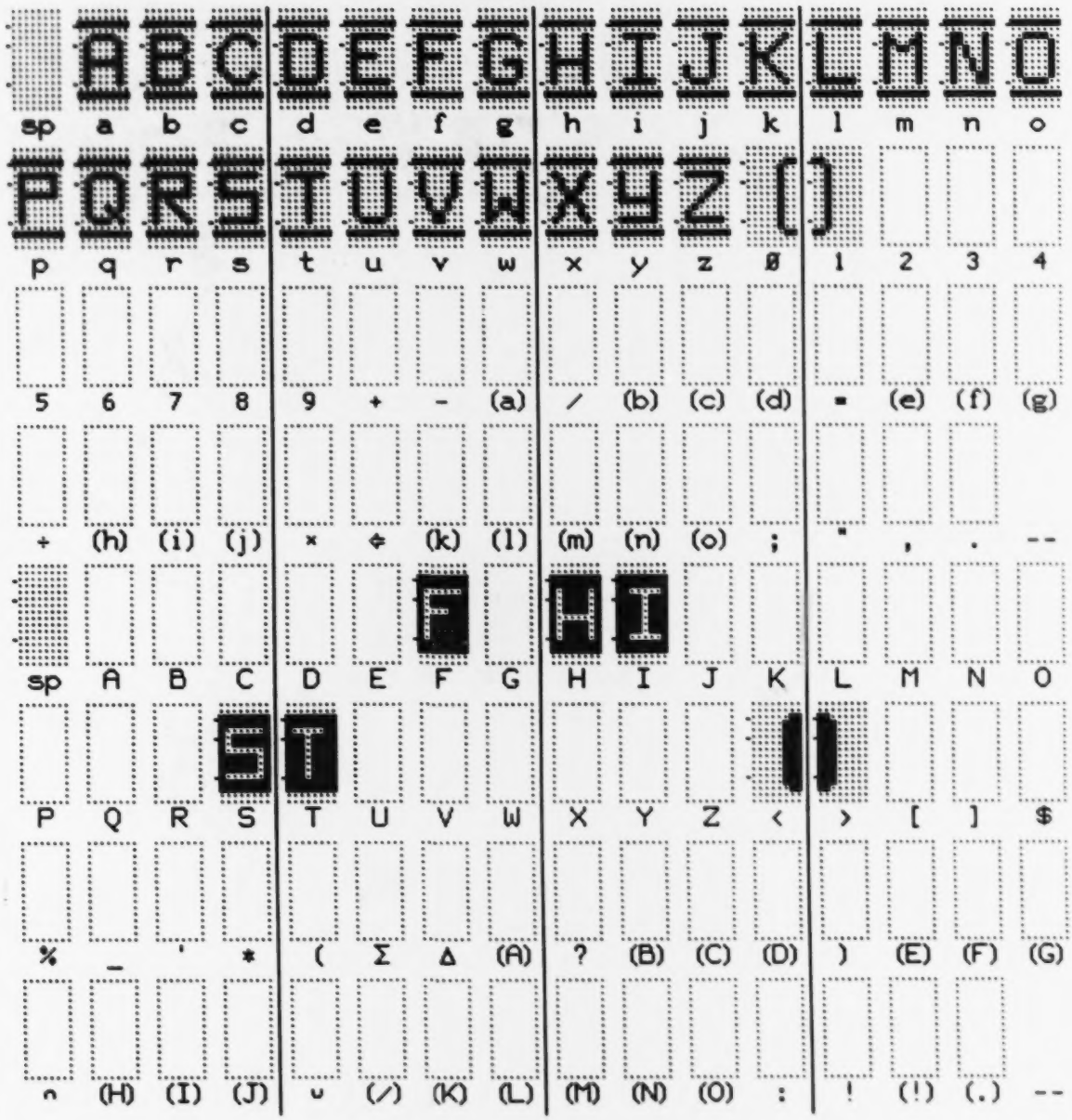

John B Gilpin
29 Jul 87
charsets,numerals

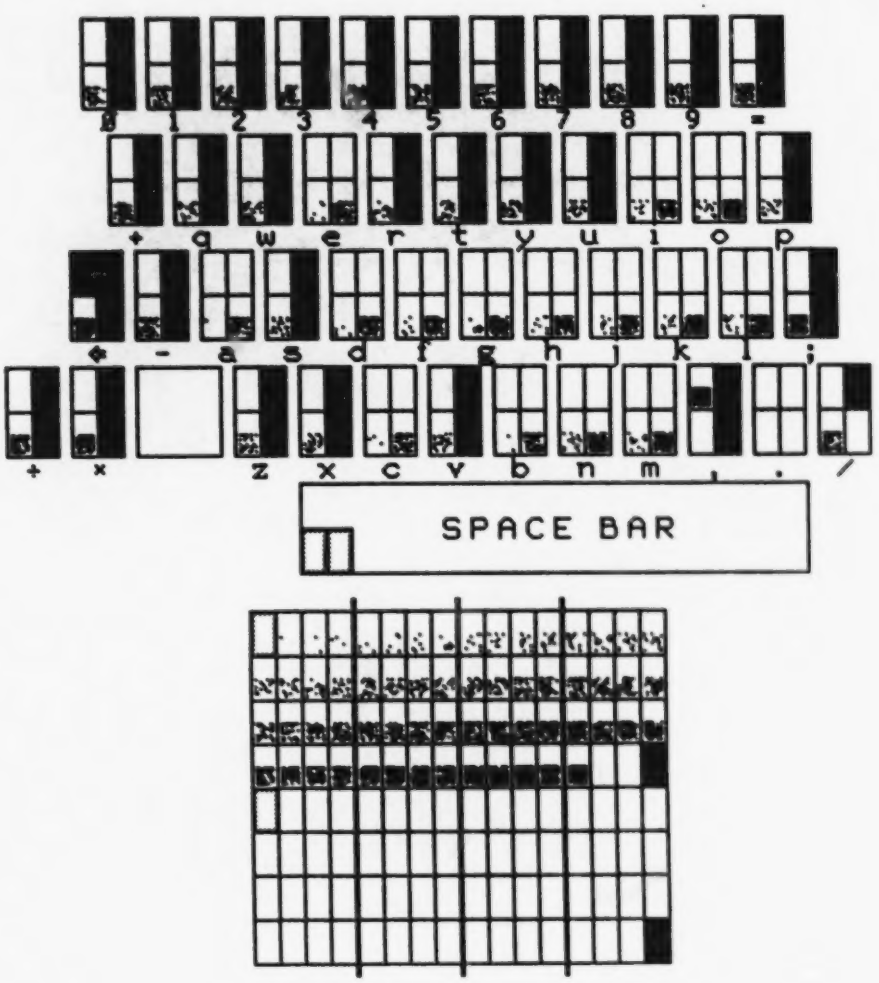


E THE EOPLE OF THE NITED TATES IN ROER TO FORM A MORE PERFECT NION ESTABLISH USTICE INSURE OMESTIC TRANQUILITY PROVIDE FOR THE COMMON DEFENCE PROMOTE THE GENERAL ELFARE AND SECURE THE BLESSINGS OF IBERTY TO OURSELVES AND OUR OSTERITY DO ORDAIN AND ESTABLISH THIS ONSTITUTION FOR THE NITED STATES OF MERICA

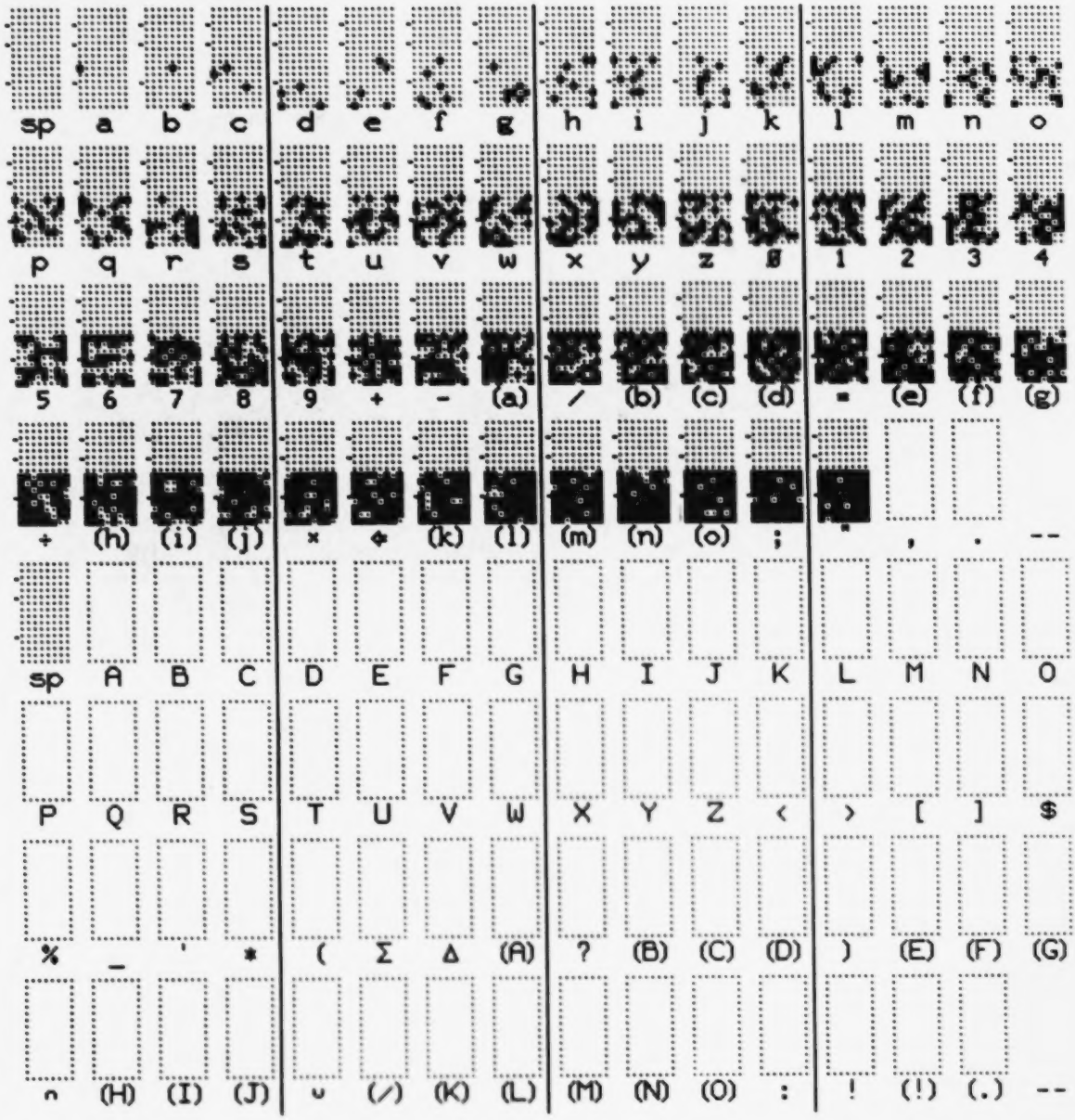


pictures,keytops2


sp a b c d e f g h i j k l m n o
p q r s t u v w x y z ( ) 1 2 3 4
5 6 7 8 9 + - (a) / (b) (c) (d) - (e) (f) (g)
+ (h) (i) (j) × ÷ (k) (l) (m) (n) (o) ; . , . --
sp A B C D E F G H I J K L M N O
P Q R S T U V W X Y Z < > [ ] $
% _ ' * (Σ Δ (A) ? (B) (C) (D)) (E) (F) (G)
↑ (H) (I) (J) ↓ (/) (K) (L) (M) (N) (O) : ! (!) (.) --
pictures,keytops2 24 Aug 83



charsets, random



charsets, random

Because a keyset diagram, text sample, and normal size character display of "blank" would not be enlightening, they are omitted. (The character matrix display is retained in order to emphasize that "blank" is not an empty charset. Rather, it is full--in fact, completely full--of spaces.)

"blank" can be used to clear a terminal's charset memory, as when you wish to ensure that characters you subsequently load are the only non-blank characters there (for example, see the inspectable utility, "showfont").

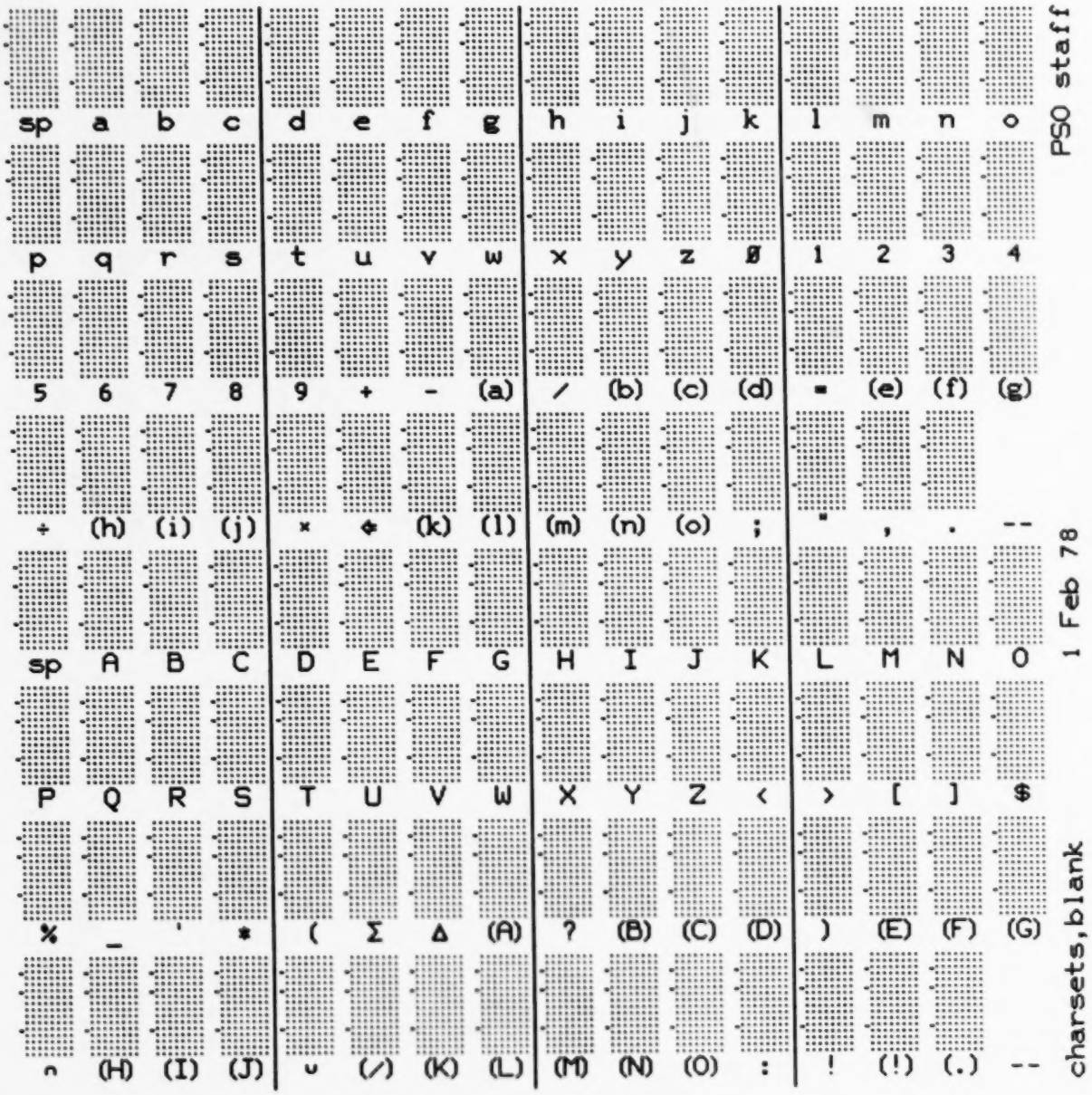
Another method for clearing the charset memory, one that is especially advantageous in Micro TUTOR, is to use a -char- loop. For example,

```
unit     clearit
calc     slot ← 0
loop
reloop   (slot ← slot + 1) = 63
outloop  slot = 127
.        char    slot, 0,0,0,0, 0,0,0,0
endloop
*
```

This method will work for any repetitive charset. For example, "testor" uses code equivalent to that above not only for charset clearing but also, substituting the first -char- below for the blank -char-, to produce an all-dots-on pattern and, substituting the second -char- below for the blank -char-, to produce a striped pattern. (Thanks to R A Avner for the code from "testor".)

```
char     slot
         o177777,o177777,o177777,o177777
         o177777,o177777,o177777,o177777

char     slot
         o177777,o121043,o142105,o104211
         o110421,o121043,o142105,o177777
```


PSO staff
1 Feb 78
charsets,blank

Appendix 1--System charset for NovaNET/ASCII terminals

The structure and content of the fixed system charset is different in ASCII terminals than it is in terminals designed for the PLATO IV protocol. (For the latter, see charset "readonly" in the body of the catalog.) Following is a listing (from file "sØascers") of the system charset for ASCII terminals.

The differences in ASCII and PLATO IV system charsets are an implementation detail. For almost all purposes, the effect for the end-user should be the same. However, note that when a personal computer with an access disk is being used as a terminal, the shapes of the characters in the system charset are determined by the disk; with an access disk, only the *order* of the characters is fixed.

ASCII character numbers are customarily given in hexadecimal (base 16), and the first 32 characters are control characters such as carriage return and backspace. To read the "MØ" table, add the number at the left to the number at the top for a given character. For example, character "$" is number 24 in hexadecimal (36 in decimal), character "K" is number 4b in hexadecimal (75 in decimal).

Thanks to Elaine Avner for locating the information given here.

CHARACTER MEMORY MØ

	ØØ	1Ø	2Ø	3Ø	4Ø	5Ø	6Ø	7Ø
Ø	NUL	DLE	SP	Ø	@	P	`	p
1	SOH	DC1	!	1	A	Q	a	q
2	STX	DC2	"	2	B	R	b	r
3	ETX	DC3	#	3	C	S	c	s
4	EOT	DC4	$	4	D	T	d	t
5	ENQ	NAK	%	5	E	U	e	u
6	ACK	SYN	&	6	F	V	f	v
7	BEL	ETB	'	7	G	W	g	w
8	BS	CAN	(	8	H	X	h	x
9	HT	EM	)	9	I	Y	i	y
a	LF	SUB	*	:	J	Z	j	z
b	VT	ESC	+	;	K	[	k	{
c	FF	FS	,	<	L	\	l	|
d	CR	GS	-	=	M	]	m	}
e	SO	RS	.	>	N	^	n	~
f	SI	US	/	?	O	_	o	del

CHARACTER MEMORY M1

20	SP	30	α	40	
21	/	31	β	41	
22	≡	32	δ	42	▫
23	~	33	λ	43	◦
24	✥	34	μ	44	◆
25	≠	35	π	45	×
26	↑	36	ρ	46	
27	→	37	σ	47	
28	↓	38	ω	48	
29	←	39	≤	49	↕
2a	×	3a	≥	4a	|
2b	Σ	3b	Θ		
2c	Δ	3c	∢		
2d	∪	3d	°		
2e	∩	3e	⟩		
2f	÷	3f	⟫		

Appendix 2--List of pictures in PSO charsets file "pictures"

PSO maintains a large file of user-made bitmapped pictures that any author may copy and use. At the main AIDS arrow, type **pictures** and follow directions to reach the Library of Pictures arrow. Type any entry from the following lists at the Pictures arrow to access related pictures. (Do not type anything in parentheses: Given an entry that reads **paper (news)**, type only **paper**.) Pictures of people are especially numerous. You can reach a useful subindex by typing **people** at the Pictures arrow. In any search, use your imagination--If you are interested in toys, read the entries under ANIMALS and WEAPONS, and maybe MUSIC and FOODS, as well as TOYS. Be sure to copy any picture you want into your own charset, since these files, "pictures" and "pictures2", sometimes change.

ANIMALS

alligator
anteater
antelope
antlers
bat
bear
bird
bobcat
bone
bull
camel
cat
chicken
cow
crab
deer
dog
donkey
dragon
duck
eagle
elephant
feather
fish
fox
frog
goose
giraffe
goat
hen
hippo
horse
horseshoe
kangaroo
lamb
lion
lizard
monkey
mouse
nest
octopus
ostrich
owl
partridge
pelican
perch
pheasant
pig
rabbit
reindeer
rhino
rooster
seahorse
seal
shark
sheep
skunk
snail
snake
starfish
stork
swan
swordfish
tiger
turkey
turtle
turtle dove
vulture
whale
worm
zebra

BUGS

ant
bee
bug
butterfly
fly
glow worm
grasshopper
ladybug
spider
web

OUTDOOR
(See also FOODS)

bud
cactus
cloud
daisey
fern
flower
forest
fountain
grasses
hill
island
leaf
logs
Minnesota
moon
mountain
mushroom
night
palm tree
plant
pod
rain
rainbow
rock
roots
rose
seeds
snowflake
sod
star
street
sun
sunset
tree
tulip
volcano
weeds
wheat

STRUCTURES

antenna
barn
cabin
church
dam
door
fence
fireplace
gate
house
igloo
jail
oil well
roof
teepee
tent
well
windmill
window

VEHICLES

airplane
ambulance
bicycle
bike
boat
bus
car
convertible
gas (can)
hatchback
helicopter
intersection
jeep
jet
model T
motorcycle
parachute
plane
racecars
road signs
rocket
rowboat
sailboat
sedan
ship
shopping cart
sign
snowmobile
spacecraft
stagecoach
steering wheel
stop sign
street signs
submarine
tractor
trailer hitch
train
tread
truck
tug

PEOPLE

acrobat
angry face
astronaut
boy
brushing (tooth)
cheerleader
climber
clown
combing
devil
drummer
elf
eskimo
eye
eyeball
face
family
feet
flagman
frown
funny face
ghost
girl
gymnast
hand
hero
indian
jockey
knee
knight
ladies
leg
lords
magician
mailman
man
mermaid
milkmaid
nose
old face
people
pipers
pirate
pogo stick
queen
referee
runner
santa
skeleton
skull
smile
snowman
sportscaster
teeth
tooth

tug-of-war
umpire
Uncle Sam
wcfields
witch

CLOTHING

belt
boot
buckle
button
dress
fan
glove
hat
jacket
mitten
necklace
purse
ribbon
ring
sneaker
socks
tie
vest
zipper

FOODS

apple
bacon
banana
bean
beet
bread
cake
candies
candy cane
carrot
celery
cheese
cone
cookie
core
corncob
crackers
cupcake
desert
donut
eggshell
flour
grapes
grape jelly
gum
ham
hamburger
honey
hotdog
jam
jelly
lemon
lollipop
milk
mushroom
orange
peach
peanut
peanutbutter
pear
peas
pickle
pie
pineapple
pizza
pop
popcorn
pretzel
pumpkin
radish
rind(melon)
salad
stew
tomato
TV dinner

HOLIDAY

firecracker
flag
ghost
gift
halloween
heart
jack-o-lantern
mask
menorah
noisemaker
santa
skeleton
skull
12 days xmas
Uncle Sam
valentine
witch
wreath

TOYS/GAMES
(See also PEOPLE)

ball
baseball
basketball
bowling
cards
chesspiece
dart
diamond
dice
doll
domino
fish hook
football
golf
helmet
hockey
ice skate
jack-in-box
kite
lure
merrygoround
net
piggybank
pogo stick
puzzle
robot
rod
skate
tictactoe
ticket
top
toy
trophy
tug-of-war
unicycle
wagon
yo-yo

WEAPONS
(See also VEHICLES)

bullet
dagger
explosion
gun
handcuff
poof
puff
ray gun
shield
smoke
sword
tank

INSIGNIA

air force (seal)
army seal
badge
border
chain
circle
colonel (seal)
eagle (emblem)
marines (seal)
navy seal
trefoil
U of I

MAIL

letter
mail box
mail man
mail truck
package

MUSIC

bell
bugle
clefs
flat
flute
guitar
harp
music
note
rest
sax
sharp
tuba
tune
violin

MONEY

coin
dime
dollar
money
nickle
penny
quarter
token

ELECTRICAL

antenna
capacitor
connector
diode
fuse
ground
inductor
knob
magnet
receptacle
resistor
switch
transistor
tube

PLATO

keytops
terminal

OBJECTS

axe
basket
bed
birdcage
book
bottle
bowl
box
brick
broom
bucket
bunkbed
cakepan
calendar
camera
can
candle
chair
chests
clock
coffeegrindr
coil
cork
cot
cube
cup
cushion
dresser
faucet
fishbowl
flashlight
foil
fork
fuse
garbage can
glass
globe
glue
grinder
hammer
hose
ink
iron
jar
jug
kettle
key
knife
knot
ladder
lamp
level
light
lightbulb
lock
map
matches
microscope
mop
mug
nail
needle
oilcan
pail
paintbrush
pan
paper (news)
pen
pencil
phone
pipe
pot
radio
razor
rake
rope
rubber stamp
rugs
safety pin
saw
scissors
screw
shovel
sink
skillet
sofa
spinning wheel
spool
spoon
sprayer
suitcase
table
tape
teapot
telephone
thermometer
thread
toothbrush
toothpaste
trash can
umbrella
vase
watch
wood
wrench
wristwatch
yarn

APPENDIX 3--Examined charsets not included in this catalog

Foreign language charsets under "Alphabets" contain many characters. Those under "Partial" contain small sets of chars evidently intended to adapt a standard alphabet for use with a particular language. Charsets under "Oversize" contain bitmapped pictures or symbols so large that individual chars are not meaningful. Those under "Similar" are the same as, or strongly related to, other charsets covered in the body of the catalog or in the lists just described. "Other" lists fragments and charsets whose purpose is not clear. Listing under "Similar" does not imply lesser priority for one charset than another. To make this list easy to read, the file name for an entry is omitted when it is "lllchars".

Alphabets

charsets	arabic
alphabets	arabic
	arabic
alphabets	armenian
charsets	burmese
alphabets	burmese
	coptic
	ghassan
charsets	hebrew
alphabets	hebrew
alphabets	hebrew2
	hebrewbbl
alphabets	hindi
	hindi
alphabets	hiragana
	hiragana
alphabets	korean
alphabets	Korean2
	korean
	oldenglish
charsets	persian
	runic
charsets	russian
charsets	rusital
charsets	thai
	thai

Partial

	diacritics
	German
	germanic
	magyar
	portugese
	scandinav
	serbian
	spanish
	swedish

Oversize

typeface	lowercase
typeface	uppercase
typeface	forlesson
typeface	serif
typeface	typeface2

Oversize (cont'd)

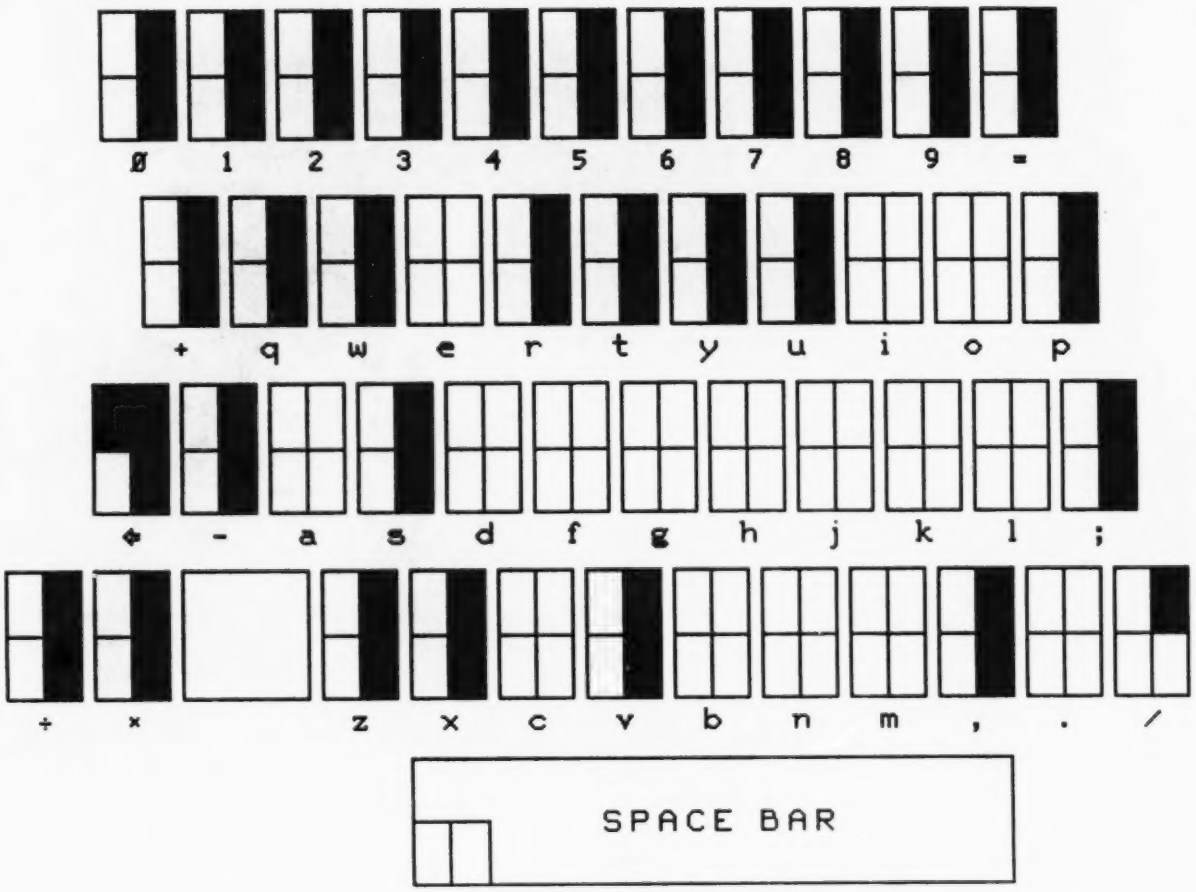
alphabets	numbers
alphabets	bold
alphabets	distar
alphabets	distar2
gothic	gothic
alphabets	copyrited
alphabets	terminals
charmic	yogi

Similar

	standard
testor	testnums
	helvetica
alphabets	4x6 chars
alphabets	5x7 chars
charmic	phon
charmic	phon2
alphabets	greek2
	newgreek
	koinegreek
	newarabic
	french/
flfmast	french
spmast	cdcproj
charmic	romital
	hebrew
hindiØ	hindi
	hiragana1
	persian
	russian
rurick	russian
charmic	russian
charmic	russym
charmic	rusital
alphabets	thai
	new thai

Other

alphabets	chinese
alphabets	NAPLP
alphabets	ascii gr2
charmic	dvorak
charmic	sensym
charmic	numerals



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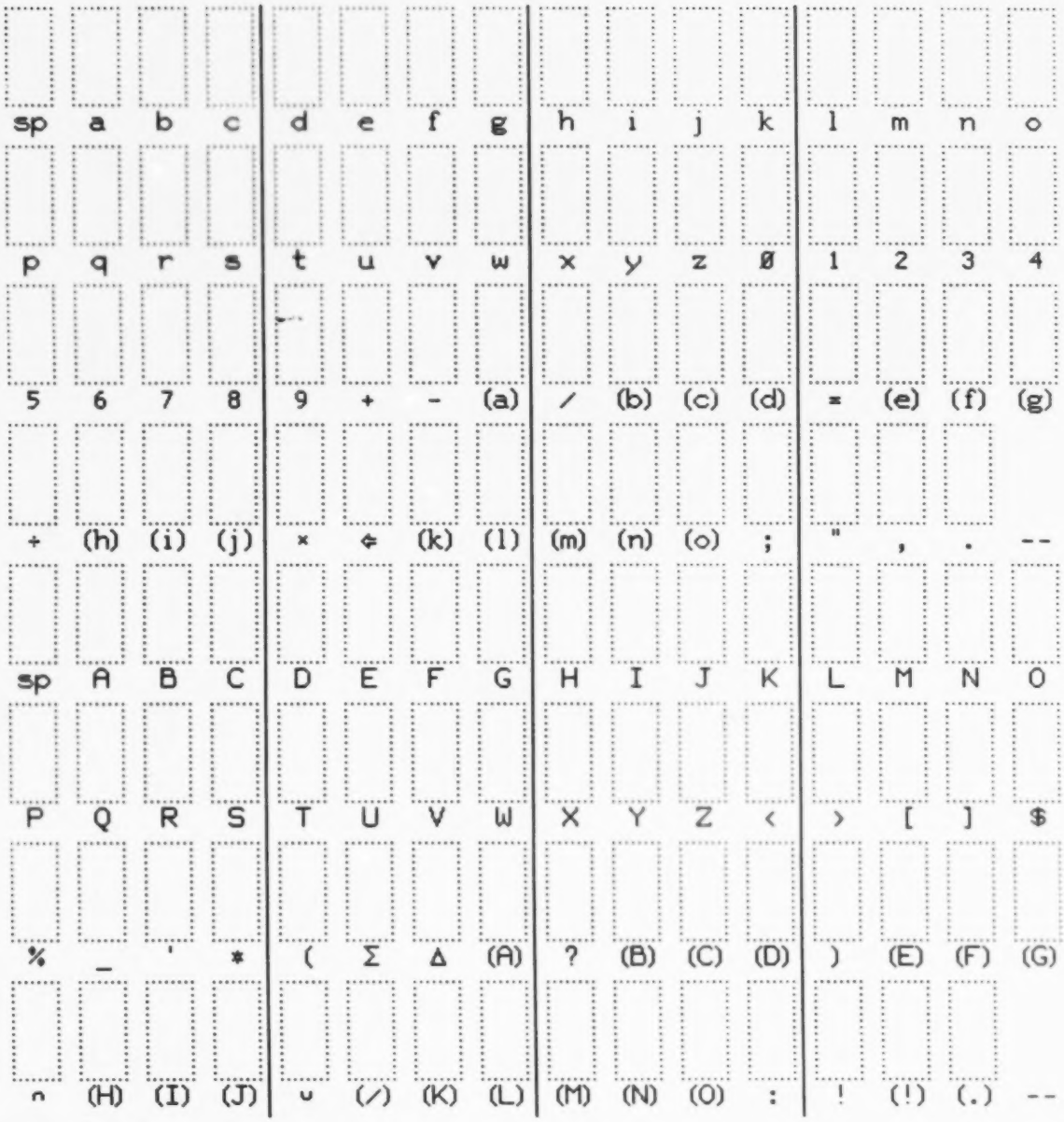

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Utility		
	1	readonly
	2	standard
	3	internal
	4	showchars
	5	smallnums
Standard-based		
	6	underline
	7	mirror
	8	upsidedown
charmic	9	screenfail
Large		
	10	larger
	11	large
	12	bigchars
typeface	13	newchars
	14	largest
Thick		
	15	extended
	16	thick3
	17	langchars
	18	thick2
lllchars	19	bold
	20	thick
Other		
	21	rounded
	22	helvetica
	23	italics2
	24	italics
	25	script
alphabets	26	script
	27	square
	28	semideco
	29	print
Small		
	30	3x5 chars2
	31	4x7 chars2
	32	4x7 chars1
	33	crunch
	34	5x7 chars
	35	3x5 chars
	36	4x6 chars
alphabets	37	3x7 chars
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Technical		
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	43	digital
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